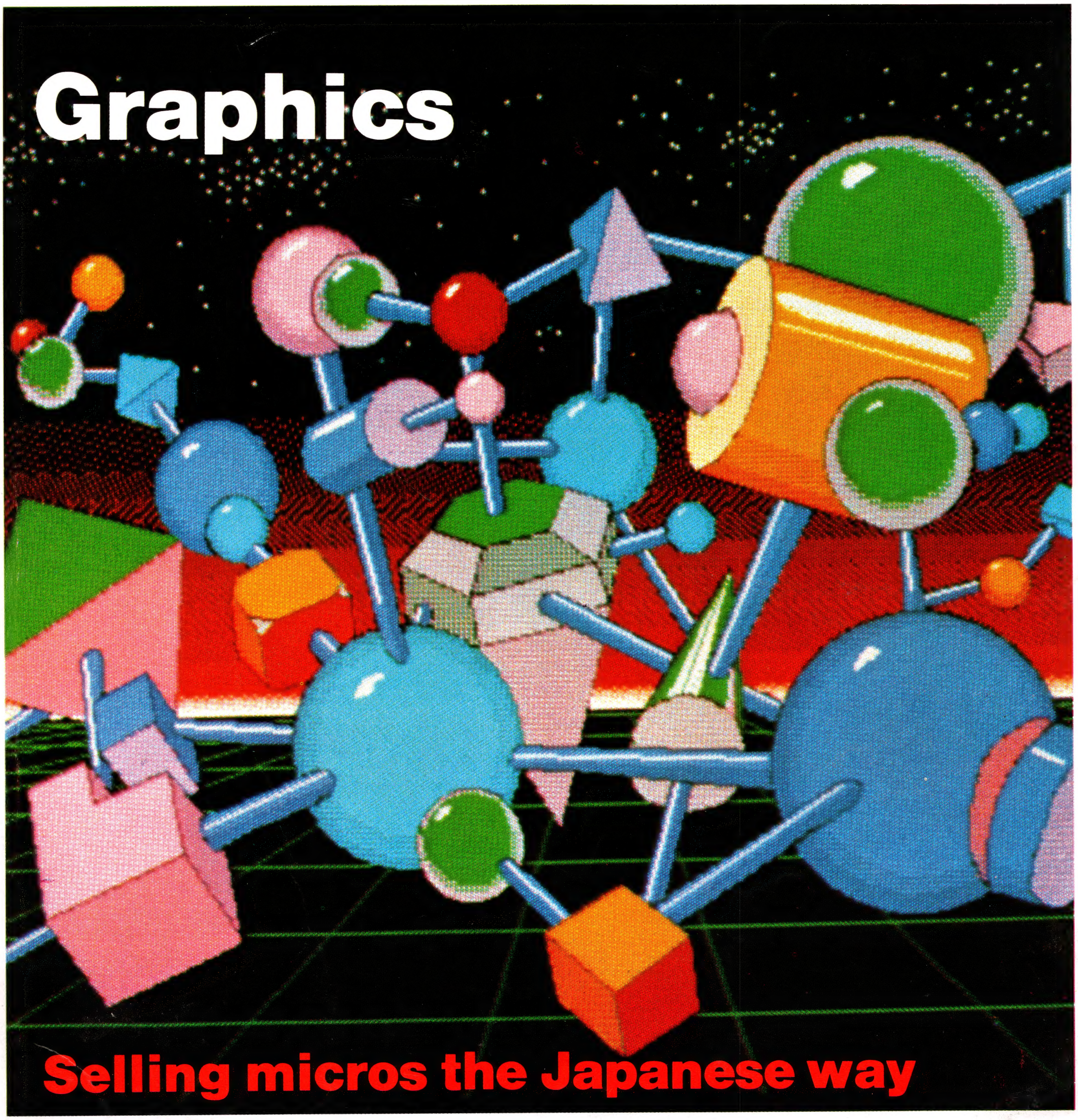
DECEMBER
1983

australian Micro computer magazine

ISSN 0811-3866
$2.00*

For people involved in the Australian microcomputing community



Registered by Australia Post — Publication No NBP 5800 — Category B

DAVONG DELIVERS WHAT EVERY APPLE, IBM, OR OSBORNE USER WANTS.

MORE disk storage

Expand the disk storage of your Apple II*, Apple III*, IBM Personal Computer*, Osborne 1 Computer™ — up to 60 megabytes of fast, reliable Winchester data storage.

MORE value

Davong 5, 10 and 15 megabyte systems are priced at only $2880, $3799 and $4348 (ex tax). Adding additional Davong slave drives costs even less. Everything you need is included. And because the Davong system is universal, your disk investment is preserved, even if you change to a different personal computer.

MORE software

The Davong system includes all the software you need to start right away. And Davong's new Multi-OS™ supports all Apple and IBM PC operating systems.

The Davong Multi-OS operating system gives your computer full multitasking network capability. Complete software support includes back-up and restore programmes.

MORE backup options

Davong offers 18Mb cartridge tape backup at an extremely attractive price.

MORE support

Additional 9 months warranty available.

MORE of what you bought your personal computer for

Better performance, higher reliability, the best value — hard disk storage from Davong.

The Davong Universal Hard Disk also supports most IBM PC- and Apple-compatible computers.

Apple II and Apple III are registered trademarks of Apple Computer Corporation.

IBM PC is a registered trademark of IBM Corporation.

Osborne 1 is a trademark of Osborne Computer Corporation.

Multi-OS is a trademark of Davong Systems. Inc.

More

DAVONG Systems, Inc.

Available from all fine Micro Computer Dealers.

APPROVED i MICROWARE

IMAGINEERING

3/579 Harris Street, Ultimo
Sydney NSW 2007 (02) 212 1411

VIC	A.C.I.	Barbara Bartlett	(03) 544 8433
	B.S. Micro	Bill Saunders	(03) 614 1433
	C'land Box Hill	Peter Adams	(03) 890 0468
	C'land Camberwell	Richard DeVere	(03) 813 1300
	C'land Melbourne	Richard Mizgala	(03) 662 2133
	Hisoft	Alan Kras	(03) 534 0383
	Metro Bus. Machines	Ian Hargreaves	(03) 383 2222
	Myer Bus. Centre	Harry Henderson	(03) 66 111
	Parity Computers	Trevor Dent	(03) 267 6844
	Random Access	Mark Thompson	(03) 62 1339
	Tech Rentals	Peter Gould	(03) 51 1303
WA	A.C.I.	Brian Goodwin	(09) 321 2859
	Merton Scott	John Krokosz	(09) 328 6522
	Myer Bus. Centre	Chris Ornsteen	(09) 321 0151
	Stott & Hoare	Peter Livingston	(09) 328 1299
QLD	A.C.I.	Fred Hill	(07) 321 2859
	C'land Brisbane	Paul Rees	(07) 221 9777
	Myer Bus. Centre	Brian Maddern	(07) 378 5111
	Computer City	Horry Hunt	(07) 388 6571
ACT	C'land Canberra	Ed Gentry	(062) 81 1379

NSW	A.C.I.	David Ridley	(02) 662 7011
	City Personal Comp., City	Greg Wiley	(02) 233 8992
	City Pers. Comp. Crows Nest	Greg Stringer	(02) 922 3600
	C'land Central Coast	Mary Hendricks	(043) 24 1811
	C'land Chatswood	Steve Byrne	(02) 411 7611
	C'land N. Sydney	Rob Byrne	(02) 929 4499
	C'land Parramatta	John Green	(02) 683 3199
	C'land Ryde	Mike Wells	(02) 808 2666
	Independent Micro	Graeme Harrison	(02) 698 7666
	Logic Shop (Crows Nest)	Andrew Holland	(02) 439 1072
	Parity Computers	Neville Marsh	(02) 929 0900
	The Computer Shop	Lynn McDonough	(02) 517 2999
	Zofarry Enterprises	Richard Purchase	(02) 745 1888
	Computermat	Arthur Jones	(02) 982 3288
SA	A.C.I.	David Gillard	(08) 268 1933
	Computer Programs etc	Paul Campbell	(08) 212 7535
	Myer Bus. Centre	John Grogan	(08) 217 0123
	Oriental Micro	Mike Greer	(08) 49 9649
	Personal Comp. Centre	Mike Duff	(08) 223 2608
	Random Access	Trevor Starke	(08) 223 2505

Enter M015 on Enquiry Card

Volume 1, No. 9
DECEMBER 1983

Index

News:

TI pulling out 5
Osborne value reaction 5
Educational contracts 5
NECISA widens range 5
Generex for IBM-PC 5
Attache venture capital 6
Apple chops dealers 6
Sydney portables 6
Telecom wins approval 8
Counter to MSX 8
Grundy grounded 8
Sinclair improves 8
IBM's Wangaratta plans 9
Microsoft in NZ 12
Dilithium books 12
Victorian policy 12
Computerland's Hyperion 12
IBM sets PC bottom line 13
World news 11

Features:

Expressing basic needs 15
Stretchcalc review 19
Direct Helper to the rescue 23
Living with Lisa 29
After Osborne: An industry shakeout looms 33
Adam's definitive Executive 26
Olivetti's Italian style 37
Meaningful maintenance 44

Japanese computers:

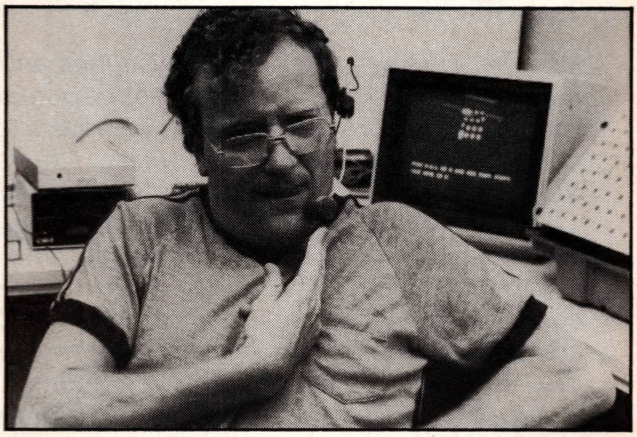
Japanese computers in Australia 47
Latest Japanese showings 59
MSX makes its move 61
Japanese invasion limbers up 63
Battle of the experts 68
Delicate thought processes 71

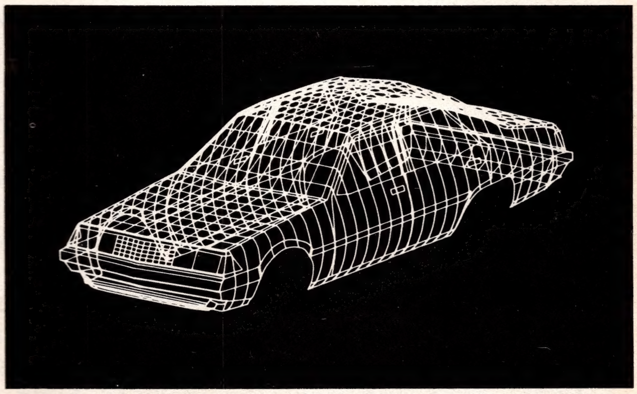
Product spotlight:

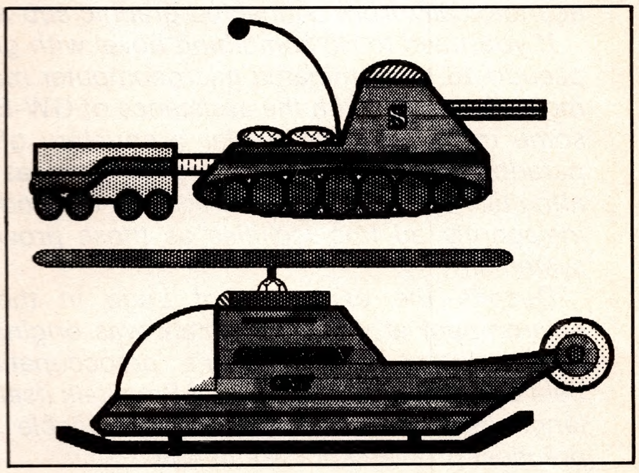
The graphics maze 75
A Graphic Fall: high-resolution color devices 82
XYZapped for television 85
Gee Whiz Basic 93
GSX-86: pathway to grahics 97
Graphics techniques 99
What you see is what you get 102

Departments:

Books 104
Snapshot 105
Systems 109
Peripherals 110
Microwave 112
Software 113
Industry 116
Applications 118
Communications 119







東芝ホームコンピュータ
HX-10S
標準価格 55,800円
MSX

COVER: Courtesy Sharp Corp Australia

The essence of personal computing

NO MATTER what brilliant applications and tools may lie buried within a computer, bringing the potential benefits to users requires breaking down the barriers to communication between people and computers. The key to breaking down these barriers is the use of interactive graphics.

Unfortunately, for most computing practitioners, a headon approach to designing graphics into systems is left in the too-hard basket, along with those other keys to computer utility: database and communications. Too many are simply prepared to rely entirely on the limited tools provided for them by others.

As can be seen from this month's product spotlight, packaged access to graphics is being rapidly brought within reach of personal computer users. While the tools which offer access to graphics can be a source of considerable intrigue and reward, they all place drastic limitations on the graphics effects which can be traded against more managable operation.

There are two widely divergent approaches to the provision of managable access to graphics.

One builds on the traditional foundations of algorithmic programming languages, operating system calls, etc., to provide facilities with which practicing computer software developers can feel comfortable. The more radical approach uses so-called "modern" languages such as Logo, Pilot and now Smalltalk to build gross effects economically from connected graphic sub-assemblies.

If you need to do something novel with graphics in the pseudo-16-bit dominated microcomputer market, you will most likely do it with the assistance of GW-Basic, GSX, or some manufacturer's similar proprietary offering. It is a paradox of computing that something as aesthetically attractive as computer graphics can be produced by such inelegantly ad hoc facilities as those provided by such systems.

Despite the explosion of Logo in the educational environment at which Smalltalk was originally targetted, and industry commentator's preoccupation with the belated commercial release of Smalltalk itself, the modern language approach will not be available for attacking practical problems for some time.

The biggest potential of Smalltalk cum Lisa-like approaches to graphics is that they may enable most graphics to be developed graphically without requiring your graphic ideas to be converted into program code for somebody else's graphics drivers to convert back to graphic effects. Graphics development remains arguably the most important challenge to computer systems designers.

Unlike the classic problems such as voice recognition and artificial intelligence, graphics is here, now, and its potential is limitless.

Tony Smith.

australian
Micro
computer magazine

Editor Ian Webster
Associate Editor Tony Smith
Chief Sub-Editor Mike Harrison
Contributing Editors Tony Adams, Warren Burt, Bill Bolton, Norman Kemp, Ron Pollak

News/Feature Network Infoworld, IBM PC World, ISO World, Computerworld

ADVERTISING
Group Manager Mike Williams
NSW Manager Rick Smith
Vic Manager David Clarkson
Brisbane Ted Vining (07) 369 7877
Perth Winkie Corfield (09) 457 6928
Adelaide John Nankervis (08) 339 1716
Ad Co-ordinator Judith Seymour

CIRCULATION
Manager Shirley Ingram, Dorothy Adams

MARKETING/DISTRIBUTION
Manager Ken Beever

PRODUCTION
Supervisor Max Jaeger

ENQUIRIES & CONTACTS
Computerworld Pty Ltd, 37-43 Alexander Street, Crows Nest 2065, Australia. Tel: (02) 439 5133 Telex: COMWOR AA74752. Computerworld Pty Ltd, 74-76 Eastern Road, South Melbourne, 3205, Australia. Tel: (03) 690 2933 Telex: ANLGAS AA37037.

Australian Microcomputer Magazine is published each month by Computerworld Pty Ltd, a company incorporated in NSW. It is available by annual subscription (see detachable sub order forms in each issue) and through newsagents and selected computer retail stores. Reprinting of articles in *Australian Microcomputer Magazine* is strictly forbidden without written permission. All rights reserved. Copyright 1983 by Computerworld Pty Ltd. Other publications published by Computerworld Pty Ltd include *Australasian Computerworld*, the newsweekly for DP professionals; *Office Automation*; directories *Greenbook of Software and Related Services, Redbook of Hardware and Related Services.*

Publisher Alan Power

*Printed by GW Graham & Co Pty Ltd.
Alexandria, NSW.*

Distributed nationally by Gordon & Gotch.

* Recommended retail price only
Registered by Australia Post —
Publication No NBP 5800 — Category B

TI pulling out of home market

TEXAS Instruments has announced that it is pulling out of the home-computer market. After announcing that it would not release a new model of its home computer, the TI 99/8, last month, it now will stop producing the TI 99/4A, after losing more than $US200 million in the past nine months.

The announcement has had a major impact on home computer retailers, with the remaining stocks of the TI 99/4A heavily discounted. The TI 99/4A has not been very successful in Australia because the local distributor refused to make the product price competitive.

Now the remaining stocks are being discounted by retailers to $A150 and demand is reported as strong. Texas Instruments will continue to service the product.

Texas Instruments is expected to follow IBM and introduce a low-end version of the TI Professional computer, with specifications similar to the IBM-PC Junior, sometime next year.

Osborne buyers react to value

SALES of Osborne's computers in Australia have been exceptional since the demise of the US portable computer manufacturer in October. The two machines have been heavily discounted and buyers have responded to the "value for money" of the two machines, in particular the Executive now priced at less than $A2500.

Several companies have made volume purchasers and with service, both in Australia and the US, assured the product should continue to be viable. Osborne Corp still is confident of finding a buyer for the company with their Canadian distributor as the leading contender.

Suggestions that Xerox, which bought a large quantity of Osborne spare parts to support it's service of Osborne warranty claims, would buy the company have proved unfounded.

Program generator release for IBM-PC

(From left) Ross Cochrane and Hilton Gray, of Micro Generics, with David Reading of Parity Computers.

THE Microsoft Basic code generator, Generex, has been released for the IBM-PC. A new company, Micro Generics has acquired the Australian distribution rights for the South African-developed package.

It was released initially for the Olivetti M20 earlier this year. Hilton Grey, who left Olivetti to start Micro Generics, said the package would be released for several other microcomputers next year.

Generex was originally a Cobol generator for ICL's DRS-20 range of minicomputers and was converted to the Olivetti M20 last year.

The package produces structured Microsoft Basic source code, from a list of English instructions for file creation, management and reporting. The Basic program can be compiled, supports user-written subroutines and includes and ISAM handler and a sort routine. A Generex licence is available for $A3000.

Prominent IBM-PC dealer Parity has signed on as the first Generex dealer.

Qld and NSW educational contracts

THE Queensland and New South Wales Education Departments have released details of computer equipment for schools contracts. The Queensland contract has approved the Microbee, BBC computer and Apple IIe computers for use in schools, as well as the Tandy Level III and color computer.

The New South Wales contract includes nine models of five computers. It includes the Microbee 16, 32 and 64, the BBC Models A & B, the Apple IIe, the Atari 800XL and IBM-PCs with either 160K or 320K disk drives.

The inclusion of the Atari 800XL on the NSW contract is regarded as a surprise as analysts have considered it will have a short market life. The competitive pride of $A329 may have encouraged its acceptance as a useful low-cost computer for schools.

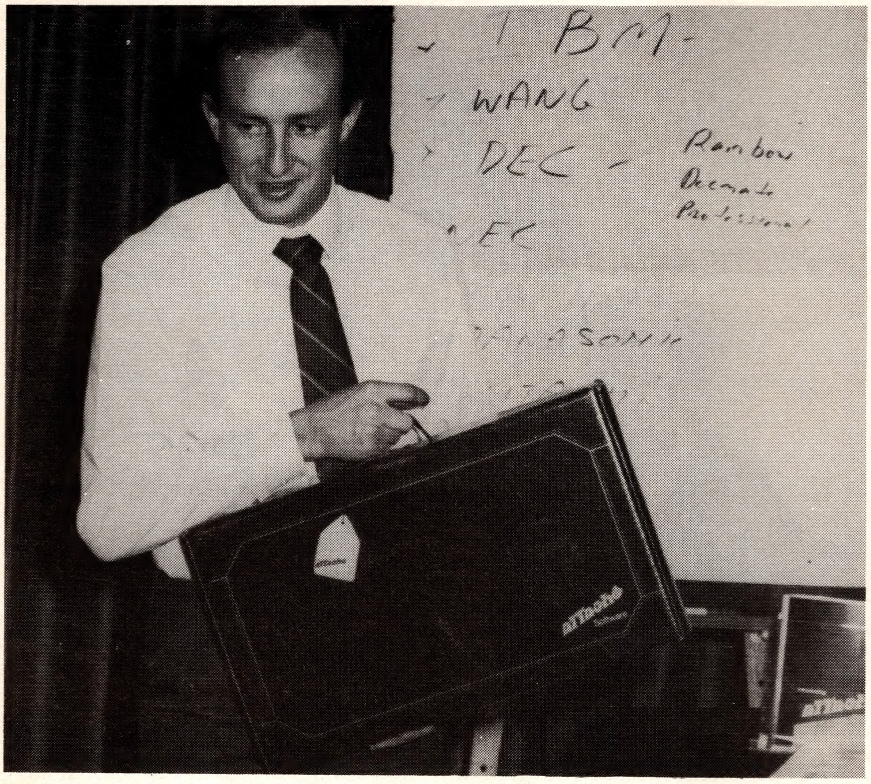
NECISA widens product range

NEC Information Systems Australia (NECISA) has announced a wide range of new products in each of its current business segments, reinforcing NEC's outstanding business growth figures, both worldwide and within Australia over the last 18 months.

In the last 12 months NECISA's growth has been little short of explosive. Barry Jeanes, NECISA's general manager of sales and support said: "We finished the financial year to March 31 with total revenues of about $A3.5 million and an aggressive plan to incease that to about $A13.5 million next year. By the end of the first quarter

BASF
BASF
MAGNETIC COMPUTER MEDIA
PERIMEDIA: (03) 347 7416

Attache obtains venture capital



Gary Blom, with one of his cardboard Attache cases.

ATTACHE software, started as a joint venture by O'Reilly computer and Admin EDP to develop personal computer accounting packages, has obtained $US2.2 million venture capital to support the US launch of its Attache accounting software package.

Attache gained some initial notoriety when the software was released packaged in a cardboard briefcase and sold as part of Angus and Robertson's foray into computer retailing with the JB 3000 microcomputer. Attache is stepping onto the US public offering bandwagon, adopting the fashionable strategy of taking an established product, raising the capital to repackage the software and launch an advertising campaign. Second-round venture capital is raised to support the orders generated by the product launch and a public offering is prepared as soon as possible after the company achieves stable growth.

The rewards to the entrepreneurs and venture capitalists are enormous. Gary Blom, president of Attache Software Inc, suggests that he is aiming for 5 per cent of the personal computer accounting software market by 1988, estimated at $US40 million dollars in revenue for Attache.

Blom hopes Attache's success in attracting US venture capital will encourage other Australian software companies to venture into the US market. For followers of software packaging fashion, Attache will be repackaged in a real briefcase with boxed documentation. Attache won the "best dressed" package award at the recent National Software Show in San Francisco.

---

we had exceeded those ambitious growth objectives in every product segment and taken more revenue than in the whole of the previous 12 months.

"As a result, we have increased our revenue objectives for this year from $A13.5 million to about $A18 million." NEC expects their revenue to be split 40 per cent from the NEC APC and 30 per cent from their ASTRA minicomputer and 30 per cent from printers and peripherals.

Jeanes gave notice that NEC intends to compete agressively in the market.

"As far as pricing is concerned, we intend to become even more competitive," Jeanes said.

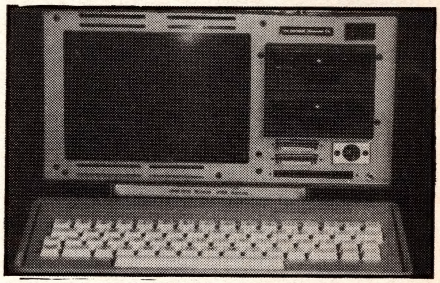
Apple terminates dealer agreements

FOR the second time in 18 months, Apple has terminated all dealer agreements in Australia. Faced with the realisation that it does not have an effective dealer base for the release of new products in Australia, with most of the leading dealers also committed to IBM, Apple has decided to try and rebuild its dealer network.

With falling sales, reportedly well short of projected monthly targets, Apple has had to contend with demands of larger retailers and its need to promote quick sales of the Apple IIe. The takeover of the Melbourne market by Apple look-alikes has underlined problems Apple always has with distribution in that city.

Sydney company releases products

A SYDNEY company Portable Computers has released two locally designed and manufactured portable computers. The company had been selling Kaypro microcomputers and decided that it could exploit a niche market for a portable computer that was more powerful than the Kaypro and expandable.



Portable Computer Co's Porta-Pak.

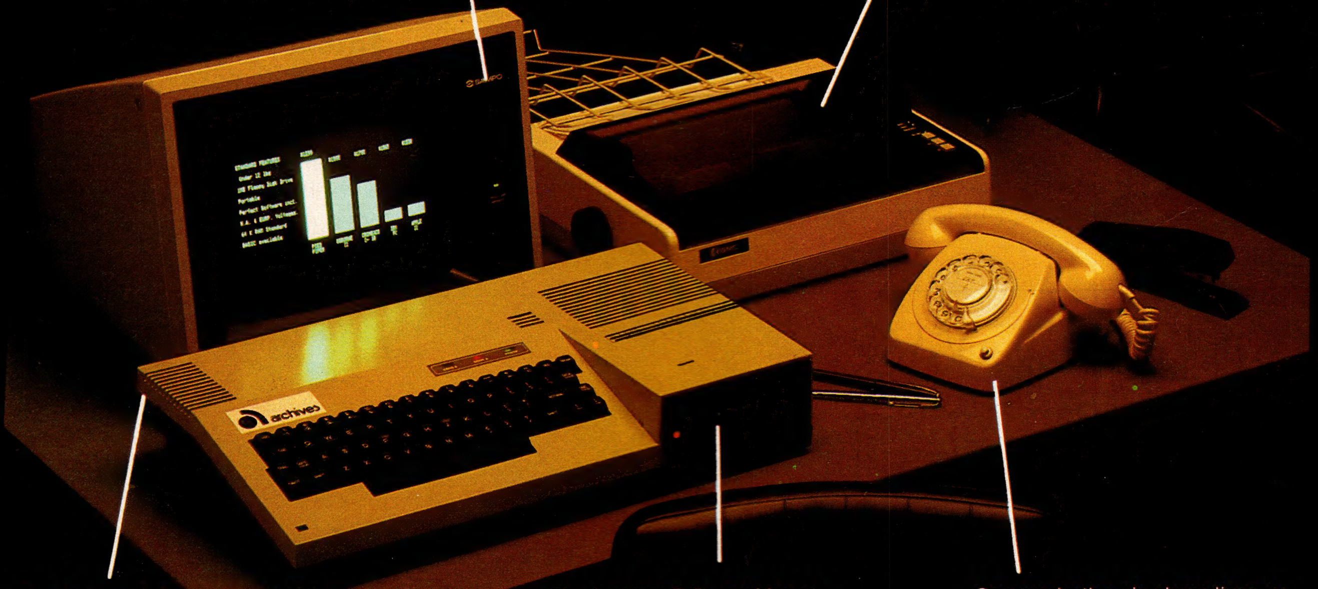
The Porta-Pak PPC is based on a Z80A processor with 128K of RAM, dual 3¼in, 500K disk drives and a 9in screen. The machine measures 7 x 7 x9, uses CP/M 3.0, comes bundled with Spellbinder and Basic/Z, and retails for $A3000.

The PPC-8 is slightly larger, offering five IEEE-696 expansion slots, dual 5in 1.6M-byte disk drives and costs $A4995. A hard disk and a 16032 processor board will be offered next year.

A spokesman for the company said there was a need for a standard, expandable portable computer from many of their industrial and scientific research customers. They expect to make 10 to 20 machines a month.

Portable Computers can be contacted at 80 Beauchamp Rd, Matraville, 661 4877.

Dollar for Dollar, Byte for Byte, at $1995* the Archives P.C. is without doubt the best Microcomputer value in Australasia



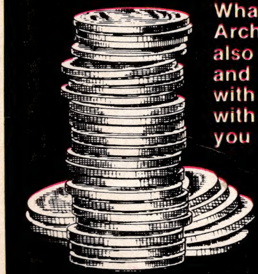
The Archives P.C. has a clear 80 column display format. A television interface is provided. The 40 column mode displays bold characters for easy vision on most TV sets. The optional 80 column monitor provides high quality display for office or home use.

The optional low cost 80 cps matrix printer features excellent print quality, with various print styles and densities. A strong tractor feed provides excellent forms handling, with single sheet friction feed also being standard.

The Archives P.C. weighs only 12 lbs. It can easily be carried anywhere with you. A keyboard cover and carry handle are provided for convenient transportation.

The Archives P.C. provides an incredible one million characters (800 K Bytes formatted) of storage on its removable diskette drive. This is enough to handle large volumes of records, and perform a comprehensive range of tasks within most small business. A port is provided for a low cost second disk drive which doubles your available storage.

Communication via phone lines, or directly with other computers can be achieved with the optional communications board. This can also be purchased to provide communication with additional system peripherals.



What you see is not all you get with the Archives P.C. package. Each system also includes over 100 files of programs and data. Perfect Writer word processor with a spelling dictionary, are provided with Interactive diskette tutorials to teach you from a beginners level. The Perfect Filer will teach you how to design forms to computerize your index cards and other files. For example: customers, stock items, address lists or whatever, with the Perfect Calc spread sheet you can perform budgets, forecasts, costings or any other "what if" type analysis you desire. The 'P.C.' also provides you CP/M, the most famous micro computer software standard. This gives you access to thousands of available professional computer programs. System utilities for information transfer, disk copies, printer control, etc., are standard features.

Why pay over twice the price for an equivalent capacity IBM or Apple computer system when you can purchase an Archives P.C. including $2000 worth of software for *$1995?

The "P.C." is distributed by one of Australia's leading microcomputer distributors. A growing network of representatives are providing nationwide support for the Archives P.C. systems. Utilising latest robotic testing technology on the Archives P.C.'s production line, maximum system reliability is achieved.

*Government Price -
recommended retail price is $2394
including sales tax.
Dealer enquiries welcome.

archives

Archives Computers (Australia) Pty. Ltd., 163 Clarendon Street,
South Melbourne, Vic. 3205. Phone (03) 699 8377.
Archives Computers (Australia) Pty. Ltd., 16th Fl, 55 Lavender St,
Milsons Point, NSW, 2061. Phone (02) 922 3188.
Archives Computers (NZ) Ltd., 419 Remuera Rd, Remuera, Auckland
5, New Zealand. Phone (9) 503 548. Telex AA 39388.

Enter M031 on Enquiry Card

Telecom wins videotex approval

COMMUNICATIONS minister Michael Duffy has announced approval for Telecom to establish a national videotex service. Mr Duffy said Telecom would soon invite tenders from selected suppliers for the supply, installation and commissioning of the necessary equipment.

The service was likely to be operating towards the end of next year he said. Mr Duffy said: "There has been strong industry support, especially through the recently formed Australian Videotex Industry Association, for Telecom to provide a national videotex service giving Australians efficient, low-cost access nationally to such a service via the automatic telephone network. The Australian Science and Technology Council (ASTEC) also supported such a service in its report *Videotex in Australia,* tabled in Parliament in September."

Videotex provides an information service for businessmen and householders. Information is transmitted in the form of digital data over telephone lines and is received on a videotex terminal or television set with an adaptor.

Mr Duffy said the provision of a national videotex service would not preclude other organisations from establishing systems to meet their own special requirements.

Counter to MSX

DIGITAL Research is set to announce its counter to Microsoft's MSX standard for home computers. This follows the quiet release of Dr Logo and Personal Basic which have been the first indications that DR is interested in the home computer market.

The product is the visual interface processor (VIP), the shell for a new ROM-based release of CP/M-80 called Personal CP/M. VIP, written in C, provides a common-user interface that will enable applications to be used across a variety of machines. The shell splits the screen into three windows for data, menu and command line. Digital is pushing past the current generation of 8-bit home computers towards the 16-bit machines with large memory that are expected to appear next year.

Grundy grounded

BRITISH microcomputer manufacturer Grundy Business Systems has collapsed after producing 16,000 Newbrain computers. Always regarded as an idiosyncratic machine, it had been positioned uneasily between the home and small business markets. Intense competition in the British market, coupled with a recent price rise for the machine and the failure of backers to provide finance needed to expand production are reported to have caused the collapse. An investment of £500,000 of public money has been lost.

Sinclair profits up

SINCLAIR Researdh has announced a pre-tax profit of £14 million this year rising from £8.55 million last year. The company is reported to be producing more than £110,000 worth of computers a month.

COMPAS PASCAL

DEALER ENQUIRIES WELCOME

You probably won't believe COMPAS until you've seen it!

australian
Micro
computer magazine

Software Report Card

Compas Pascal

	Poor	Fair	Good	Excellent
Setup	☐	☐	☐	☑
Ease of Use	☐	☐	☐	☑
Performance	☐	☐	☐	☑
Documentation	☐	☐	☐	☑
Serviceability	☐	☐	☐	☑

See review in September issue.
Dealer enquiries welcome.

You probably won't believe COMPAS until you've seen it. Standard Pascal in a single 22K-byte program, including an advanced on-screen editor. Compiling 6000 lines per minute directly into native Z80 machine code (not slow p-code), which runs faster than anything yet seen. Well, it's true, and it's here.

COMPAS Pascal closely follows the definition of Standard Pascal, as set for forward by Jensen & Wirth in the "Pascal User Manual and Report". Furthermore, several extensions are offered by COMPAS, to make it the most complete implementation of Pascal ever seen on a microcomputer.

Now available in both 8 and 16-bit versions for:

CP/M*, Apple* with Softcard
PC-DOS*, MS-DOS*, CP/M-86*

* registered trademark.

SOME OF THE COMPAS FEATURES:

- Wordstar* like editor
- Dynamic strings
- Random access data files
- Structured constants
- Free ordering of sections within declaration part
- Alphanumeric labels
- Control characters in string constants
- Type conversion functions
- Program chaining with common variables
- Program overlaying
- Include files
- Full support of operating system facilities
- Logical operations on integers
- Bit/byte manipulation
- Direct access to CPU memory and data ports
- Absolute address variables
- In-line machine code and external subroutines

K.J. COMPUTER SERVICES, PO Box 66, Mentone Vic 3194. (03) 772 0781, (03) 772 5177

Enter M039 on Enquiry Card

Shot in the arm for Wangaratta

IBM's conversion of its Wangaratta typewriter factory to PC manufacture had been a matter of conjecture for many weeks before its announcement, although the leaking of that speculation several days in advance is reported to have disappointed Victorian Premier John Cain.

Faced with local typewriter manufacture ceasing to be viable and a corporation policy of never retrenching staff, it was IBM Australia's initiative to attract PC manufacture here rather than less glamorous alternatives. Other indicators of Australia's selection as the third PC manufacturing plant in the world included the announcement earlier this year of the appointment of senior IBM executive Tony Bowra as director of technical operations, and increasingly frequent Australian visits by corporate vice-president Don Estridge, known within IBM as the father of the PC.

One reason repeatedly emphasised by IBM spokesmen for the corporate decision to site PC manufacture in Australia was the world-standard performance of the Wangaratta factory with regard to both productivity and quality control. After conceding that some reliability problems had occured with PCs delivered in Australia because of faulty power supplies, IBM Australia managing director, Brian Finn, claimed that current PC reliability was satisfactory, and that local manufacture would not make any significant difference in that area.

IBM was targetting 25 per cent Australian sourcing of hardware components, a level which it was obliged to maintain under the federal and state offset scheme credit agreements which it had made with the respective governments. The Federal government has estimated that IBM will buy $A27 million worth of components from Australian manufacturers over five years.

That level of demand from an undoubtably reliable customer should prove a significant impetus to the development of the local component industry and the development of that industry could improve the supporting infrastructure for indiginous computer manufacturers — provided, of course, that IBM does not tie up the total production capacity of too many of its Australian suppliers.

The IBM plant at Wangaratta

The three governments' jump onto IBM Australia's bandwagon has enabled IBM to guarantee its own long-term offset credit position in tendering for government contracts, and has enabled the governments to be seen as supporting high technology, increasingly a points winner with sections of the media. The political co-operation of the Australian, Victorian and New South Wales Labor governments which IBM's initiatives catalysed is as much a sign of those governments' wish to project a moderate, pragmatic image as of any association of IBM with high technology.

But all three governments have been starting recently to give somewhat more than lip service to indiginous high technology. The federal endoresement of the key Espie committee recommendation and NSW's policy preannouncements followed Victoria's direct support of a succession of individual businesses.

Realisation of the potential benefits to the local computer hardware industry of IBM's move will depend heavily on the maintenance of the will of those governments to pay more than lip service to the need for local high-technology industries. A spokesman for the Victorian Ministry for Economic Development said the IBM move would in no way weaken his State government's support of indiginous hardware manufacturers.

Premier Cain already had announced that his government would give maximum support to local companies developing software to fit in with the new IBM requirements, and that further support would be given to local suppliers of components to be used in PC manufacture. While IBM officially backs the Australian Computer Equipment Suppliers Association's (ACESA) hard line on all matters except tariff levels, the company has in recent months certainly appeared less defensive about the fledgling Australian hardware industry than several other ACESA members.

Despite proclaiming a wish that the Australian Computer Equipment Manufacturers Association (ACEMA) could come around to ACESA's point of view and work with it, IBM recently has jointly tendered with Queensland's Eracom and expressed an as-yet unfulfilled interest in some activities which potentially would support Australian manufacturers.

IBM has no plans to establish any supporting hardware research and development capability in Australia, unlike in Japan, where its joint design effort with Matshusta, the 5550, fills the PC's market niche while also incorporating several more advanced features. Thus, IBM will not take up any of the vastly underutilised hardware design talent available in Australia, and the nation will remain dependent on its rash of designer-driven hardware manufacturing companies to develop further that area of high-technology capabilities.

It is a well-established fact that such companies cannot maintain even the general market growth rate for very long under Australia's deficient economic structure without direct government intervention on their behalf. With the advent of an ever-growing PC family, claimed by some forecasters as likely to take 50 per cent of the desktop computer market in 1985, it remains to be seen whether the three government's proclaimed support for indiginous high technology will be maintained as strongly when their support for IBM starts bearing fruit.

BASF
BASF
MAGNETIC COMPUTER MEDIA
PERIMEDIA: (03) 347 7416

Roland Quality at affordable prices.

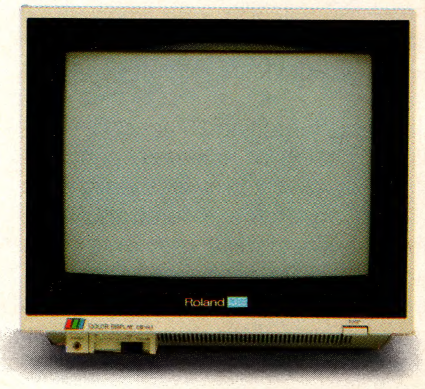
- 8-pen XY plotter,
- 2 speeds,
- 180mm/sec (max.),
- RS232 & Centronics interface ports,
- 360 x 260mm plotting range,
- Magnetic paper grip,
- and is a low-cost high performance CAD/CAM & graphics plotter.

There's also a Roland DXY-101 single pen plotter available.

You'll never find better value in 14" RGB or Composite Color monitors.

CC141:RGB System
Has a 14" Hi-Res color display.
IBM PC compatible, also
Apple II with optional Apple
RGB card.

CB141:Composite System
Complete with built-in
amplifier and speaker.



Both products feature non-glare screens and feature built-in fault protection.
Ask about our AMDEK green and amber screen monitors.
Full 12 months warranty on all products, plus full service support
from our Sydney and Melbourne service centres.
Dealer and OEM inquiries to Adrian Stephens, Melbourne.

Roland DG

39 Victoria St., Fitzroy, Victoria. 3065.
Tel: (03) 417 1800. Telex: 35276.

23 Cross St., Brookvale, N.S.W. 2100.
Tel: (02) 938 3911. Telex 27769.

Enter M030 on Enquiry Card

Apple blossoms

NOW that Steve Wozniak is back at Apple and in charge of the Apple II development team, several new products are expected to be released. The first will be the Unifile and Duofile disk drives, followed by a 10M Profile disk drive and Apple's long-awaited upgrade to DOS 3.3, Prodos.

Apple president John Scully has been demonstrating an Apple IIe with a mouse attachment and running a Lisa-like environment. Apple is trying to both enhance and diversify the product ranges while still providing compatibility between systems for data transfer on the Applenet network due to be introduced next year.

The release of Macintosh, Apple's next personal computer is expected at the January shareholders' meeting of Apple Computer.

Hard-disk Rainbow

DIGITAL Equipment Corp has announced the Rainbow 100+ a hard-disk version of the Rainbow 100. The machine features an integral 10M-byte hard disk and 128K of memory expandable to 896K-bytes, using either 64K or 256K RAM chips.

The system costs $US5475. An upgrade kit for the Rainbow 100 is available with either a 5M-byte or 10M-byte hard disk.

DEC also is releasing Lotus 1-2-3 for the Rainbow, and enhanced versions of CP/M 80/86 and MS-DOS for the hard-disk environments.

Rush to go public

THE collapse of the Osborne Corp has not stopped the rush of microcomputer companies to go public in the US. Select Systems has just gone public, following the extraordinary success of the Lotus offering in August.

Software publishers, Ashton-tate and Micropro are about to make share offerings, as is Softsel, the largest software distributor in the world. Hardware companies are a little less anxious, with Morrow postponing a public offering until conditions improve, but Compaq, which is about to introduce a 10M-byte hard-disk upgrade for its popular IBM-compatible transportable computer still intends to make an offering this year.

Computer store franchise companies also plan public offerings. Byte Industries, Businessland, Entre Computers and Inacomp all intend to raise $US5 million to $SU10 million to fund the rapid expansion of their franchise operations.

$US99 Multiplan

MICROSOFT's best-selling spreadsheet program, Multiplan, will be available on the Commodore 64 for $US99. The initial approach to Microsoft was made by Commodore, but negotiations were terminated after Commodore announced the product pricing before the agreement was finalised.

Microsoft has given the product to Human Engineered Software (HES), one of the leading Commodore 64 software companies, in which Microsoft has a shareholding. Commodore has responded by charging Microsoft with restraint of trade and price fixing.

Commodore is seeking $US32 million in a Pennsylvania District Court.

DEC's Microvax

CLAIMING it signals the completion of its VAX engineering strategy begun six years ago, DEC last week unwrapped the first micro-based implementation of its 32-bit superminicomputer in Hudson, Massachusetts.

Using a subset of the VAX architecture, the Microvax I is said to have 35 per cent of the processing power of the high-end VAX 11/730, and is compatible with some of the programs used by other members of the VAX family. The desktop system represented the first step towards putting the VAX onto a chip, DEC said.

Radio Shack boost

TANDY has signed a preliminary agreement with PC Telemart, a software distributor, to sell software not owned, licensed or labeled by Tandy, in Radio Shack stores. A pilot program will boost software available in Radio Shack stores from 300 to 3000 packages.

The move is seen both as an attempt to support the CP/M operating system that Tandy now offers and to try and counter its dramatic drop in market-share, from an estimated 40.5 per cent in 1979 to 8.5 per cent this year.

Kaypro board

KAYPRO has released an 8088 co-processor board for the Kaypro II and Kaypro 4. The coprocessor board also features 256K of RAM that is configured as a RAM disk when using the Kaypro's Z80 processor under CP/M 80.

The board will be available as an upgrade to Kaypro owners and bundled with the Kaypro as the Kaypro II plus 88 and Kaypro 4 plus 88. MS-DOS is included with the board.

China's Great Wall

THE Chinese Electronics Industry Ministry and Beijing Wire Communications Factory have developd an IBM-compatible microcomputer that will be put into volume production this year. The machine has an 8088 processor with 256K of RAM, detachable keyboard and 320K-byte disk drives.

The Great Wall 100 runs all of the IBM PC operating systems as well as several utility and applications programs supporting chinese character processing.

As a high-performance personal computer system, it is believed the Great Wall 100 will be widely used in China for engineering design, scientific calculation, transaction processing, enterprise management, information communication, process control, intellectual education and entertainment.

Model 4 portable

TANDY has released a transportable version of the Model 4 microcomputer. The machine is completely compatible with the full size Model 4, including the CP/M 3.0 operating system, and comes with a 9in screen.

The sysem uses half-height 5in drives, measures 10 x 14 x 10in, and costs $US1799.

BASF
BASF
MAGNETIC COMPUTER MEDIA
PERIMEDIA: (03) 347 7416

AUTHORISED DEALER

commodore
COMPUTERS

AN 8000 SERIES (CONSISTING OF CBM 8032, 8050 (DRIVE), 8023 PRINTER AND CABLES) ACCOUNTING SYSTEM WITH SOFTWARE FROM $5320.

PROGRAMMING COURSES FOR COMMODORE COMPUTERS STARTING AT $45 WILL BEGIN EARLY NEXT YEAR. MAKE ENQUIRIES NOW.

VIC-20 64

NOW AVAILABLE

COMMODORE HARDWARE AND SOFTWARE SPECIALIST

MICRO VISIONS

Contact:
MICHAEL LA ROBINA,
472 ANZAC PDE.,
KINGSFORD, NSW 2032.
(02) 662-4063.

Enter M061 on Enquiry Card

Microsoft appoints NZ distributor

MICROSOFT, a leading supplier of operating systems, programming languages and applications programme, has appointed Interactive Applications Ltd as its sole distributor in New Zealand. The agreement was finalised in New Zealand this week between Microsoft general manager, Linda Graham, and Interactive Applications' managing director, Phil Norman.

Interactive Applications is best known for its Charter Series of business packages which are written in Microsoft Basic. The company also is developing versions of its Charter Series, for release next year, that will run under Microsoft's multi-user operating system Xenix.

Microsoft has also announced it will drop its runtime royalty fees for software developers using Microsoft Basic, Business Basic and Cobol language compilers. Runtime support routines normally are provided with a compiled language, then added to the applications programs when completed.

Dilithium books fulfilling demand

MERL Miller president of dilithium Press, visited Australia last month. Dilithium has established a reputation for publishing popular introductory books to computers and computing.

Miller started the company in 1978 and sold 2.3 million copies of books last year. He says demand for computer books is enormous, especially for books that can be understood by people who know nothing about computers.

The ANZ Book Co, dilithium's agent in Australia, has just sold out its first locally printed run of dilithium's classic *Computers for Everybody.* The third edition of this book will be available early next year, and ANZ intends producing a local version of the *Computers for Everybody Buyers Guide,* detailing all microcomputers available on the Australian market.

Victorian policy statement

THE Victorian Education Department has released its computer education policy statement, together with a specification document for computer suppliers wanting to become approved suppliers to the department.

With a definitive statement of policy, including an implementation strategy, the department has issued a comprehensive and considered plan for the introduction and use of computers in the Victorian system.

With affirmative action for girls in computing and emphasis on teacher training strategy, the document reflects the position of the recent Schools Commission Policy Committee. It also reflects the historical development of computer education in Victoria with a policy of supporting a range of hardware appropriate for particular functions and declaring the department's intention to develop a set of educational performance specifications that will be used to encourage local manufacturers to build a Victorian educational computer.

Another controversial aspect of the document is its support for the currently fashionable position that computer literacy can be achieved by the extensive use of computers in schools.

The strength of the document is its broad systemic perspective, acknowledging the impact of the technology right across the education system and the importance of structured support at all levels.

It is an important document, making a a strong, uncompromising statement about the intentions of the Victorian Education Department that shows it is possible to develop a computer policy reflecting the broader educational concerns of the department, with regard to the hidden and overt curriculum.

Computerland adds Hyperion

COMPUTERLAND has added another computer to its expanding range of systems. The computer is a Canadian-designed portable called Hyperion, also IBM-compatible.

The machine weighs less than 10kg and features 256K-bytes of RAM and 630K-bytes of disk storage. The distinctive case of the Hyperion was styled by the same team that designed the casing for Apple's Lisa.

Computerland has moved to a new warehouse complex at Frenchs Forest, Sydney, and expects to add another 10 franchised stores to their existing 18 stores next year. Computerland Eastern Suburbs, in Bondi Junction, Sydney, has established a learning centre that will provide a variety of courses for their customers.

It also has established a corporate marketing division that will use the learning centre for staff training for major accounts clients. ☐

IBM sets the bottom line for its PC activities

Ian Webster reviews the non-event of 1983

IBM has released its IBM-PC Junior in the US. Announced as IBM's most affordable computer, deliveries are scheduled for the first quarter of next year.

The Junior will be demonstrated in more than 1000 IBM dealers across the US in December, and each dealer is reported to have been allocated 15 machines. Technical details are sketchy, and make an assessment of the machine difficult.

The PC Junior is an IBM computer, designed, built and packaged according to IBM's philosophy. It is a conservative machine with an extensive array of enhancements and a promise of reliable operation underlined by 12 months' warranty.

The entry-level machine features an 8088 processor with 64K-bytes of ROM, 64K-bytes of RAM, a battery powered programmable keyboard with function keys that is connected either by an infrared link or cable to the system unit, a separate power supply, three-voice sound, color graphics, two cartridge slots, connectors for joysticks, parallel and serial printers, light pen and cassette recorder. The machine provides a 40-col display and can use a television set or the IBM color monitor.

The entry-level machine can be upgraded with a 64K RAM cartridge that includes 80-col display capability and a slimline, double-sided, 360K 5in disk drive using PC-DOS 2.1 operating system. The enhanced model features 128K-bytes of RAM, 80-col text display and the 360K disk drive.

No detail is provided on the graphics or sound features of the machine. There is an allusion to the use of custom VLSI for some of the graphics and I/O, in IBM's press release, and the sound generation capability appears similar to the three voice TI chip now standard on most home computers.

There is little information about system software included with the Junior, although the machine can be expected to use an implementation of GW-Basic, possibly MSX Basic.

Even though the Junior has 64K-bytes of ROM, which includes a program called "Keyboard Adventure" to introduce users to the keyboard, the release mentions an optional enhanced Basic cartridge, suggesting that there may be two levels of Basic for the machine.

The documentation consists of a guide to operations and an introductory hands-on booklet.

A range of software for the Junior in cartridge and disk formats has been announced. The entry-level machine will retail for $US669, and the enhanced model for $US1269.

The Junior has not been announced in Australia.

IBM's press release mentions that PC-DOS 2.1 is available for all machines in the PC range, the IBM Personal Computer color printer, featuring 200 char/sec operation and eight color printing for $US1995. Several new programs including a communications program, Personal Communications Manager, a utility program for the IBM hard disk have been released.

One of the few surprises, is the PC Junior has chosen to use the 8088 processor rather than the 80188 processor. This choice could create a price window for manufactures of PC Junior clones.

The Junior isn't the future of home or personal computing. It is however, a subtle machine that should not be underestimated. IBM is using it to casually cut the personal computer market to the shape of its perceived customer base. The market underneath the PC Junior will be left to Japanese and Asian manufacturers, while other personal computer manufacturers will be forced to take the risk of developing the personal dimensions of computing.

It is ironic that IBM's strategy for building and marketing large computers is so appropriate in the microcomputer market, where whole large sections of the industry have to be mobilised to support a new machine if it is to be successful. ☐

Word processing? SELECT the best!
The only simple thing about SELECT is using it.

Select The EASY TO LEARN, EASY TO USE WORD-PROCESSOR for IBM PC, XT, MS-DOS and most CP/M systems, SELECT IS THE EASY ONE. The full-power, full-feature wordprocessor without that complicated multi-key command system. You type a single key to execute each command, whether it's adding one word or making a complex block move.
Teach On-screen training offers you mastery of your word-processing problems in just 90 minutes — no need to pore over complex manuals.
Help Full HELP instructions available on-screen, even in edit mode.
Superspell Spelling Dictionary, checks and corrects spelling errors. Fast, efficient and EASY to use.
Mailmerging Mass-mailing capability, stores both your form letters and names and addresses. Combine them, update them, use them any time quickly and easily.

All in one package at one competitive price . . . $650 (inc. tax). No shopping for additional software. Dealer enquiries welcome.

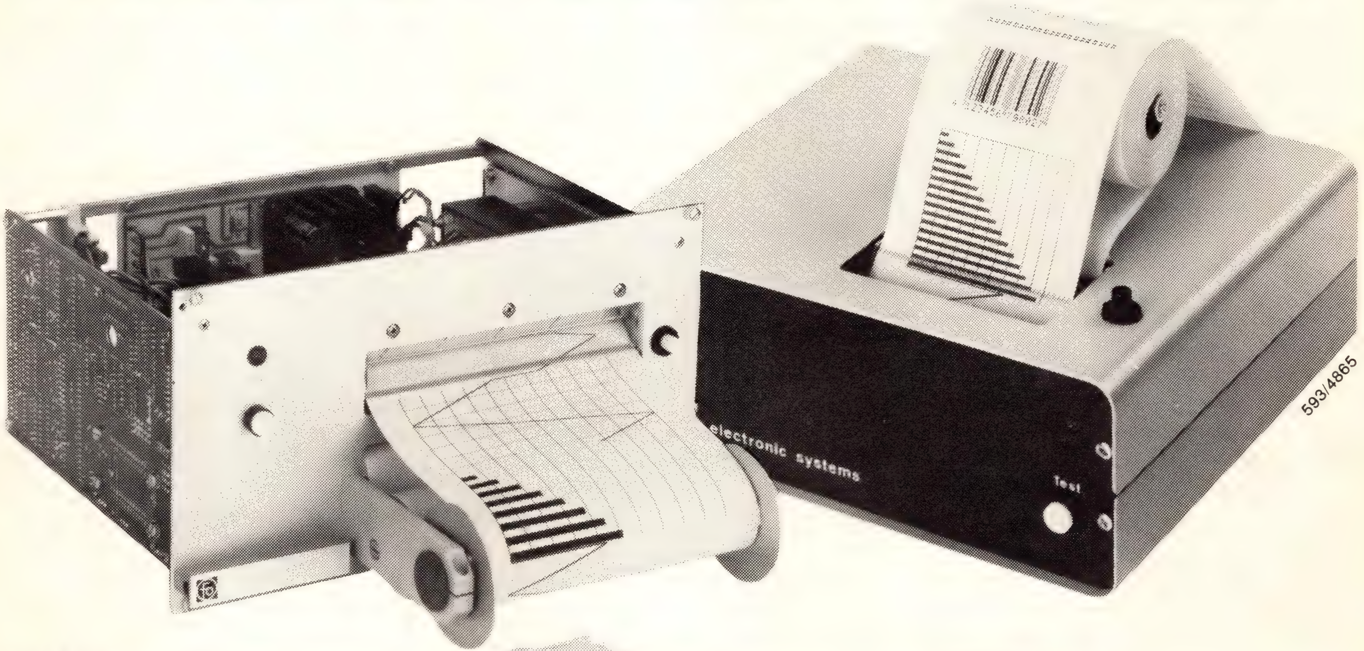
select
SELECT INFORMATION SYSTEMS

Australian distributors for select — The Software House Pty Ltd (Inc. in Vic.)
80 Mount Street, Heidelberg, Victoria 3084. P.O. Box 20, Rosanna.
Ph. (03) 459 7877. TLX: 38432 UFIVE ATTN. SOFTWARE.

Enter M064 on Enquiry Card

SIEMENS

‘State of the Art’ Thermal Plotters/Printers

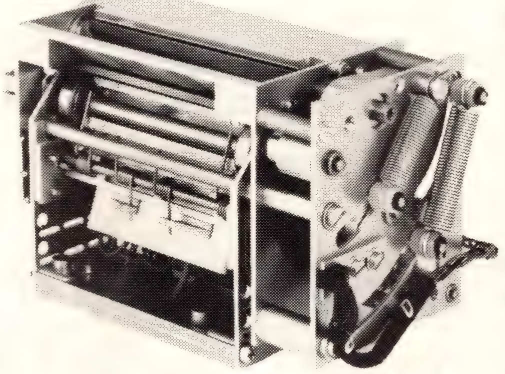


The F & O thermal dot matrix plotters/printers, available from Siemens, are capable of dot addressable graphics, plotting of graphs by transmission of only a single data byte, printing of bar codes and the printing of ASCII characters in 12 different formats. These microprocessor based plotters/printers are available in 150 dot and 300 dot configurations, and printing or plotting takes place at up to 40 mm of paper per second. A unique "no pressure" paper advance mechanism reduces friction and extends printhead life. Precision machined and cast parts are used to assure long term, dependable operation.

Principles of Operation

Voltage is applied to a series of individual heating elements where each element represents a single printed dot.

When the elements are heated, the temperature sensitive paper changes colour in the heated area. After the horizontal line of dots has been printed, the paper is advanced one dot height so that a continuous vertical line can be printed.



The desktop and rack mounted versions can either be locked in the plotter mode or can be switched between plotting and printing modes via software control characters.

RS-232C, 20 mA current loop, and bit parallel/word serial interfaces are all standard on every unit. The exclusive paper advance mechanism lifts the printhead away from the paper during manual line feeds. This eliminates unnecessary abrasive contact and extends printhead life.

Features

- ☐ 150 or 300 dot versions
- ☐ Most popular bar codes available
- ☐ Dot addressable graphics
- ☐ Graphing mode with user adjustable co-ordinate system
- ☐ Character size, matrix and boldness software selectable
- ☐ 256 Character buffer
- ☐ Sensor for "No Paper"

Options

- ☐ Paper cut-off mechanism
- ☐ Paper take-up reel
- ☐ Dual copy paper
- ☐ Printhead mechanisms available for OEM design applications.

Siemens Ltd. **(Inc. in Vic.)**
Melbourne: 544 Church Street,
Richmond Vic. 3121 Phone: 420 7111

Sydney: 383 Pacific Highway, Artarmon,
N.S.W. 2064 Phone: 436 8711

Brisbane: 9 Parkview Street, Milton,
Qld. 4064 Phone: 369 9666

Perth: 153 Burswood Road, Victoria
Park, W.A. 6100 Phone: 362 0123

Enter M025 on Enquiry Card

DEBORAH SMITH reports from the Spastic Centre of NSW on the effect microcomputers and novel electronic aids can have on the lives of Australia's handicapped people.

Expressing basic needs

SO OFTEN we take even the most basic levels of communication for granted. It is easy to forget the lifetime of frustration for those who cannot speak, who cannot move, or whose limbs twitch and muscles jerk so uncontrollably that even typing a message is out of their reach.

This is the area where microcomputers and electronic aids will have an enormous impact on the lives of many severely handicapped people — a potential as yet largely untapped in Australia. Education and recreation are important side benefits.

But providing a means of expressing ideas, basic needs and simply to interact with other people is the greatest advantage offered by the new technology. The experiences of one severely physically handicapped boy at a NSW Spastic Centre school stands out as an illustration.

The boy cannot use a keyboard on a typewriter or any of the Apple II computers at his school. As well, an uncontrollable neck reflex means that if he tries looking in one direction, his head automatically jerks the other way. While this makes it impossible for him to watch as a group of symbols on a board are scanned, he can listen as a speech synthesiser reads out the letters.

At first, he used pressure from his legs to activate a single switch on hearing the desired letter, but only reached a 50 per cent success rate. Closer examination of his muscles revealed one in his little finger which was not subject to the same spasms as the rest.

With recently developed electrodes attached to this spot, a simple twitch of the finger stops the scanner.

With the aid of the Apple II, words are now his to use, instead of simply respond to. He can express what he feels, and has been working on his own script for a favourite television program *Dr Who.*

Psychologist, Robert Gilchrist, joined the Spastic Centre six years ago. His original role was to assess the work potential of handicapped people to be employed at the centre's large manufacturing complex in Sydney's Allambie Heights, Centre Industries.

A Federal government grant in 1980 allowed the purchase of nine Apple II computers. Three went to Centre Industries and three to each of the two nearby Spastic Centre schools. Gilchrist became involved in their application.

Spastics, people with cerebral palsy — the muscular disfunction caused by damage to the developing brain — differ greatly in the severity of their physical handicap. But since writing requires fine hand control, most spastic people need to use electric typewriters.

Many also rely on long-familiar keyguards which make the often laborious task of moving an unsteady hand to one key and then tapping, possible. Those with greater head than hand control may use a pointer stick attached to their forehead instead.

Access to the computer is the first barrier for the handicapped. Initially, Centre Industries' electronics staff developed scanning equipment for those who could not use keyboards. But it became obvious that a wide variety of products could be bought from Prentke Romich for less than the cost of their development and maintenance at the centre, Gilchrist said.

The more direct the access, preferably on a keyboard, the better. A magnetic handpiece, moved across the surface of a display board can accommodate the erratic hand movements of a spastic user.

Magnetic proximity switches or hand, head, or mouth-held pulse modulated light beams, are available alternatives to key touching. Also, a joystick gives quick, direct scanning by driving a light around the board of symbols.

Other people may only be able to select with gross body movements as letters and numbers on the display are scanned automatically by row and column.

Each individual's capabilities determine which pressure switch suits them best: one activiated by chin pressure, an arm slot control, a tongue switch that is activated by slight tongue, nose, chin, cheek or finger movement, a wobble stick for those who can only control gross movements, or a switch that requires the user to suck or blow down a tube. The symbols help those who cannot yet spell.

The Apple II can also be accesed by speech, using the Shadow VET device. One boy at the Spastic Centre has best control of his eye muscles. A switching technique using a beam of infra-red light reflected from his eyes was devised for him at the NSW Institute of Technology. He can interrupt the beam by closing his eyes or rolling them.

Handicapped people are no different to other computer users, and many enjoy playing games on them. Obviously the otherwise popular space invader-type games are not suitable because of the good eye and hand co-ordination they require.

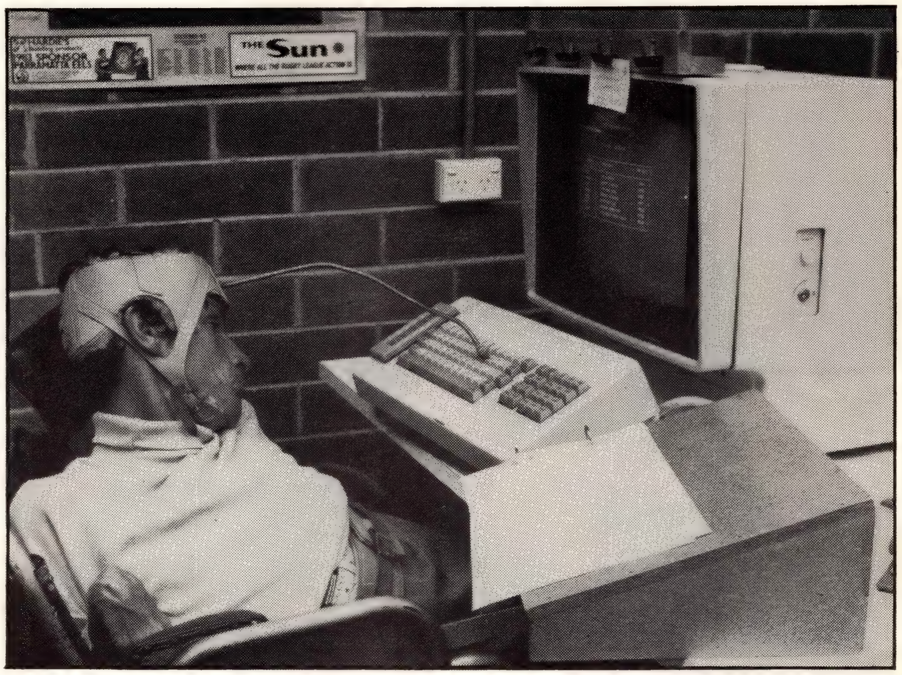
Simulation and adventure games like Dungeons and Dragons are better, and computer chess has its appeal.

Mind games are one area where the physically handicapped can "crush" their more able-bodied opponents, as one chess player at Centre Industries put it.

With such limited computer facilities, their recreational use must give way to educational use at the Spastic Centre schools. The computer environment was superb for handicapped children, Gilchrist said. The technology is unthreatening.

Humans can give children disruptive messages — like being impatient with their slowness — through their body language. It also is easy to misread the body language of someone with cerebral palsy since their facial movements are uncontrolled and can look unfamiliar.

However, the computers are supportive, patient and non-punishing. The student can have a self-contained relationship with the computer that gives them independence from other people, a rare event for some disabled people whose every need and wish has to be guessed at by those who care for them.



Richard Fernantz entering data into the Facom mainframe.

Learning to make selections from symbols and objects by whatever means are suitable is an important part of the Spastic Centre schools' curriculum. Individual tuition in subjects like maths and spelling is achieved with drill and practice programs.

This kind of teaching is often impossible otherwise in a classroom of handicapped people with varying abilities. Apart from the obvious difficulties of impaired speech and hearing, and an inability to write, some spastic children have additional developmental disadvantages.

They lack a wide range of experiences that average children have, and which help to reinforce abstract concepts like size and space, according to Gilchrist. Simulation programs on the computer can fill in some of these experience gaps for the children.

Gilchrist describes the word processor as an "information prosthesis" for the handicapped. On average, 10 people a year move on from the Spastic Centre schools to Centre Industries. This is not a sheltered workshop, but a commercially competitive factory where about half of the 600 employees are handicapped.

A large part of Centre Industries' output is electronic equipment, like switching gears for Telecom. But a recent contract was won for the manufacture of negative ion generators.

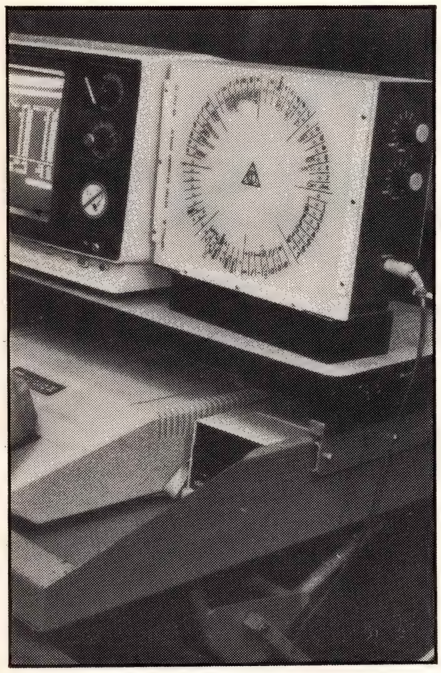
The cluster of heavy presses standing silent at one end of the manufacturing floor attest to the shift from mechanical to electronic output. Other workers were assembling earguards and packaging board games. But everywhere, throughout the administration area, production floor and stores, many employees can be seen scooting busily along in their wheelchairs.

Since the 1960s a mainframe computer has been used by Centre Industries to handle the payroll and factory inventory. Nearly all those who imput data into the mainframe are handicapped people, as are half the programming staff. Training as a programmer is done on the job.

This experience has long demonstrated that working with computers suited physically handicapped people, Gilchrist said.

Information handling skills are required, not physical manipulation, and the person with cerebral palsy has the advantage of being used to thinking problems out in their heads. The three Apple II computers at Centre Industries have a two-fold purpose. They are used for continuing eduction of adults in the workplace.

Priority was given to those who were most handicapped and had been most difficult to place in the workforce, Gilchrist said. Being able to work gave the others both monetary as well emotional satisfaction, a fact brought home to this reporter by the enthusiasm



Input Scanner for the Apple

with which many of the Centre industries employees displayed their skills to a new onlooker.

One keen enthusiast for the computers, and wordprocessors in particular, is Chris, one of the co-editors of the Spastic Centre's newsletter *"Centrepiece"*. When he spoke with *Australasian Micro* he was disappointed to be back laboriously typing his copy for the next issue on a typewriter.

He sorely misses the computer's facilities for text editing, spelling checks and memory. Most of all, he liked the control the computer gave him over most of the production of his magazine. Once more, he has to rely on others to make the stencil and do the layout.

The second use of the Apples is to manage the payroll for the handicapped workers at Centre Industries. Remuneration is computed on the basis of several factors including working potential, efficiency and bonuses. Two Centre Industries handicaped workers, Robert and Lee, have been involved in establishing this payroll system on the computer.

Matching people with the most suitable job helps keep Centre Industries commercially competitive. Lee has even bought his own Apple II, which he prefers to leave at work.

Only a handful of people at Centre Industries have their own computers or electronic aids as yet. But there is no shortage of enthusiasts.

Centre Industries has it own Apple users group which meets at lunchtime. They call their group the "Spastic Apple." ☐

Announcing
MBM
SELLS
IBM
PC & XT

. . . but why buy from us?

There's a dozen good reasons:

OUR SERVICES:
- 90 day guarantee
- Computer Setup and Installation
- Yearly Maintenance Agreement
- 5 Computer Consultants
- 14 Auto Service Fleet
- Staff of 26
- 23 years of office experience

PLUS TRAINING:
- Professional Computer Trainer
- Computer Training on IBM & Apple
- Fully Equipped Classroom
- Elements of Word Processing, Visicalc, Data Base and Accounting Software
- Networking

apple computer
® Authorised Dealer
IIe, III,
Lisa

METROPOLITAN
BUSINESS MACHINE
CO PTY LTD
338-342 SYDNEY RD, COBURG
(03) 383 2222

Enter M059 on Enquiry Card

Rainbow 100. Its monitor lets you see 12 months into the future instead of only 7.

There's no crystal ball involved, just very advanced technology.

Which is why the monitor of Digital's Rainbow 100 personal computer is so remarkable. Because it has the capability to let you view 132 columns at once–as well as the standard 80 columns found on ordinary personal computers.

In practical terms this means that you can study a full 12 months' figures in a spreadsheet program at the same time, (with an 80-column display, only 7 months' figures are immediately viewable). When working with variables that can affect your business over a whole year, the greater flexibility of the Rainbow 100 can make an important difference.

There are many other advantages to be found throughout the Rainbow 100 system. Like the superbly designed keyboard; very logically set out and very slim in profile. So you can type while your wrists are actually resting on the desktop. Or, if you prefer, just sit back and rest the keyboard on your lap. Either way it's very easy to work with.

However, the most outstanding feature of the Rainbow 100 is its astonishing versatility. Because the Rainbow 100 can run either the latest 16-bit programs or hundreds of the well-tried and tested 8-bit programs that have been the industry standard for years.

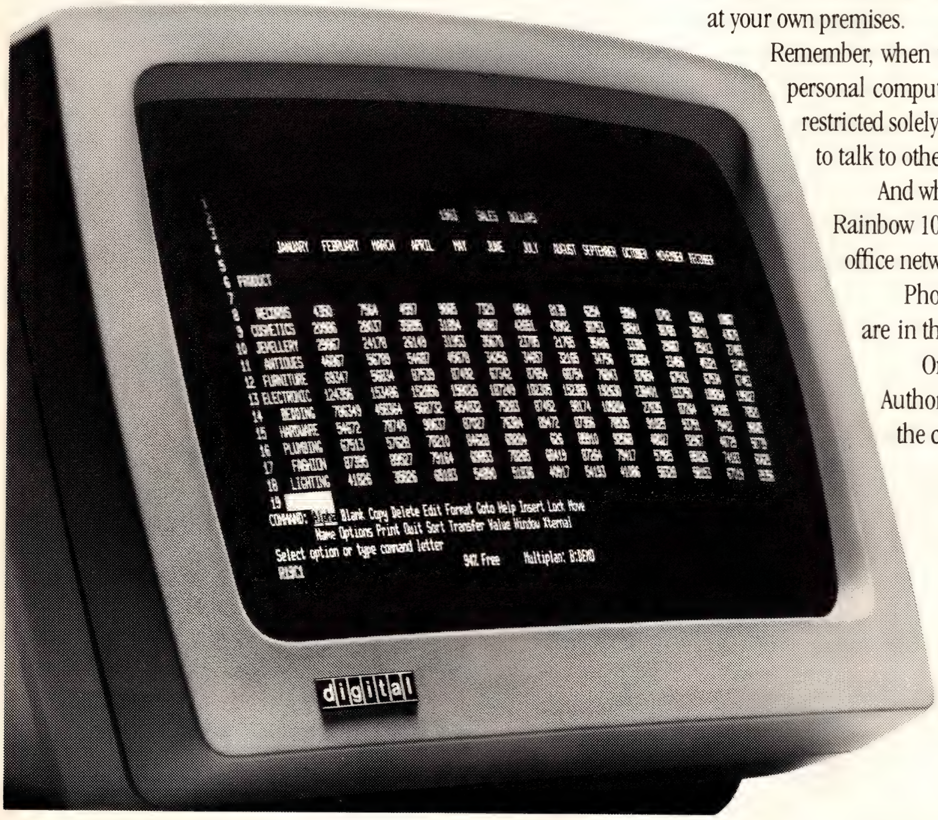
Digital's customer assistance and back-up is rather outstanding, too. When you purchase a Rainbow 100, you have access to the Digital Helpline which can assist you with most 'familiarization' problems informally over the phone. Whilst perhaps best of all for the new purchaser, is Digital's unique warranty which covers you for 12 months at your own premises.

Remember, when you buy a Rainbow 100, you're acquiring a personal computer with virtually unlimited potential. It is not restricted solely to 'stand alone' use. It also has the capability to talk to other personal computers and mainframes.

And when in the future you hopefully expand, your Rainbow 100 will expand with you. Right up to a total office network with worldwide communications abilities.

Phone the toll-free number (008) 22 6446. If you are in the Sydney metropolitan area phone 412 5590.

Or send in the coupon for details of your nearest Authorized Digital Dealer. Then you can monitor the capabilities of the Rainbow 100 for yourself.


SALES DOLLARS
JANUARY FEBRUARY MARCH APRIL MAY JUNE JULY AUGUST SEPTEMBER OCTOBER NOVEMBER DECEMBER
PRODUCT
RECORDS
COSMETICS
JEWELLERY
ANTIQUES
FURNITURE
ELECTRONIC
BEDDING
HARDWARE
PLUMBING
FASHION
LIGHTING
COMMAND: Alpha Blank Copy Delete Edit Format Goto Help Insert Lock Move
Name Options Print Quit Sort Transfer Value Window Xternal
Select option or type command letter
94% Free Multiplan: B:DEMO
R19C1
digital

digital

So easy to work with.

Digital Equipment Corporation, Chatswood Plaza, Railway Street, Chatswood, NSW, 2067. I'd like to see the Rainbow 100 in action. Please send me details of my nearest Authorized Digital Dealer.

Name ______________________ Address ______________________ Postcode __________ Phone __________

Dailey/DEC 44/M/Dec

Enter M010 on Enquiry Card

First there was Visicalc. Now, according to Ron Pollack comes a great enhancement . . .

STRETCHCALC

VISICALC, reputedly the software product that launched Apple into the business world, is now enhanced. Stretchcalc adds new dimensions to a product which, reputedly, has sold more copies than Pacman! Now an IBM PC or XT owner, using Visicalc, can produce graphs, sort data and create their own commands.

Graphs

Although it has been possible to produce graphs from Visicalc worksheets by passing DIF files to products like Visiplot, it meant a lengthy process. Firstly, users had to save their files, load another program before finally starting to prepare their graphs.

Should they have wanted to change the figures that created their graphs, a lengthy path was necessary to reproduce another. So Stretchcalc is a refreshing change, one that will attract users to using graphs more often.

In Stretchcalc's case, it is not even necessary to load another disk to print graphs (as is necessary with Lotus 1-2-3). The Stretchcalc program has been established to fit neatly into the Visicalc command stream at the top of the screen. After following the initial procedures, the additional commands appear as A commands in their logical place in the menu. The "A" stands for "advanced", not "additional".

There are eight possible graph types. These are area, bar, component bar (stacked bar in 1-2-3 terminology), dot, high/low/close, line, pie and scatter (XY with 1-2-3).

The one I like best is the area graph. As Stretchcalc does not support a color plotter it is unlikely that you will print this graph, it really is only for screen display.

The area graph creates a 90 x 150mm (approx) block on the screen and completely fills this block with shading or color, depending on your hardware configuration, changing shades or color to portray the different components.

Lotus 1-2-3 has nothing to match the visual impact of the area graph when it is full color. But even though the area graph looks great, I found it difficult to appreciate what benefit it gives the viewer.

This was equally true of the high/low/close graph, a style of graph which I could not find in my business satistics text books, although these, admittedly, are 10 years old. Each graph is produced easily, and can be recreated with a few keystrokes after making changes. Lotus 1-2-3 recreates graphs faster, as only one keystroke is necessary to redisplay the graph after a change.

The colors are red, yellow and green. They are quite distinct, and create an easy-to-read graph. Unfortunately, even though many of the graphs will handle more than three elements, Stretchcalc will display only three colors.

Furthermore, Stretchcalc does not use different symbols to indicate different elements of the graph (as does 1-2-3, which can use boxes, diamonds, circles, etc). When displaying graphs on a monochrome graphics screen or on a color screen using more than three variables, the lack of a clear legend makes interpretation of a graph reasonably difficult, particularly where lines on the graph meet.

Perhaps when it comes to graphing, Stretchcalc's strongest point is its ability to quickly produce printed graphs. Without being of the quality of 1-2-3 graphs, they are readable and presentable.

There are two possible sizes; small (35 x 90mm) and large (80 x 150mm). The small graph is, by far, the better quality, the large one is a long way behind Lotus 1-2-3 in clarity.

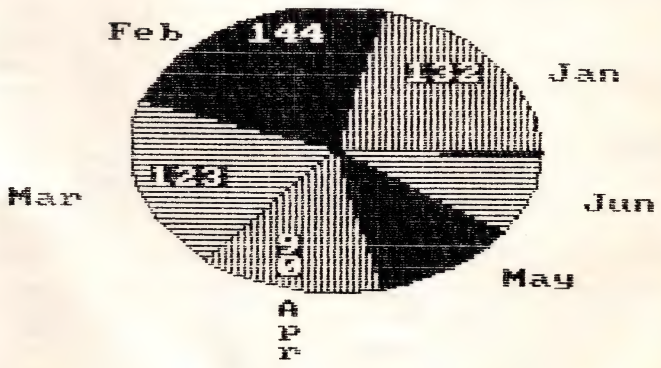
If you refer to the graphs prepared for this article you will see they do illustrate some of the points made above: that is, the bar graph, the component bar and the pie graph are clear and easy to read, the high/low/ close is a bit difficult to understand and it is difficult to see which line is which in the line graph. I am sure that with some practice with the graphing options, I could circumvent some of these problems.

Moving

It has been a long time since I used Visicalc, and my original experience was on a Commodore 8032. The Commodore version I used (and I trust they have updated it by now) was only a subset of the present IBM Visicalc.

For example, it did not even have an *IF* function. At the time, however, I must admit I thought Visicalc was fantastic! Subsequent packages, like Multiplan and Lotus 1-2-3, have provided features which, once you have seen them, beg you to ask, *"Don't all spreadsheets do this?"*

Sort and *Move* are two such features which were lacking on Visicalc. Visicalc with Stretchcalc now has an effective *Sort* command, and even



Stretchcalc Pie Graph

better, it has an *Undo* command which cleverly replaces the last sorted list into the sequence it was in before the last sort.

Neither Multiplan or 1-2-3 offer this facility. Also, whereas Visicalc does have a Move command, the Stretchcalc Advanced Move command enables the user to move a number of columns or rows at the same time.

User-defined commands

Very cleverly, Stretchcalc will remember a series of 80 keystrokes and then allow you to recall them later. It therefore allows users to create their own commands. What's more, the Multisoft people (cheeky name for a software company, as it aludes to Multiplan from Microsoft), have supplied 18 commands for a user, including compressed print, cursor up 10 times and format right/left.

When setting up these special user-defined commands, one can use any letter, function key or combination of function key and one of [*SHIFT*], [*CONTROL*] or [*ALT*]. Therefore, there can be up to 40 such commands.

These user-defined commands can be saved to disk and called during the running of any subsequent spreadsheet, making them very useful. If the user does not want to first key in the keystrokes, believing that it is just as easy to enter the commands directly, the *ADVANCED USER DEFINE* command can be invoked.

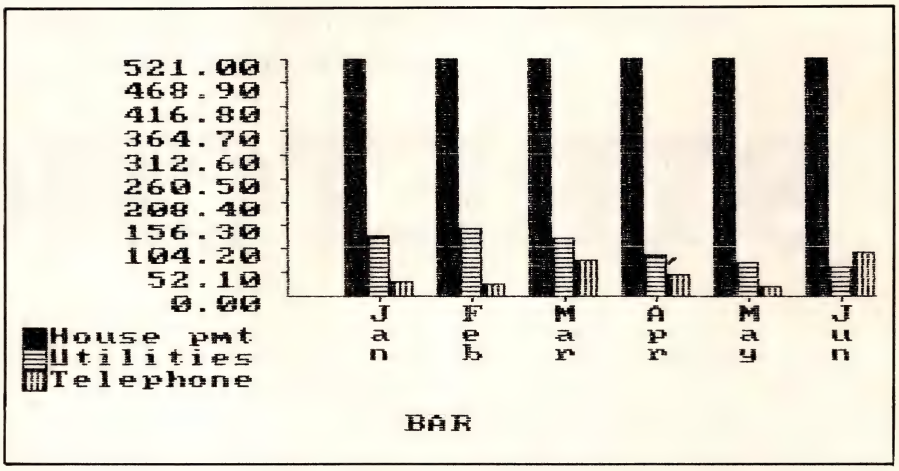
Any errors can be corrected using the */AU EDIT* command. These commands are well described in the manual, which also provides some simple examples.

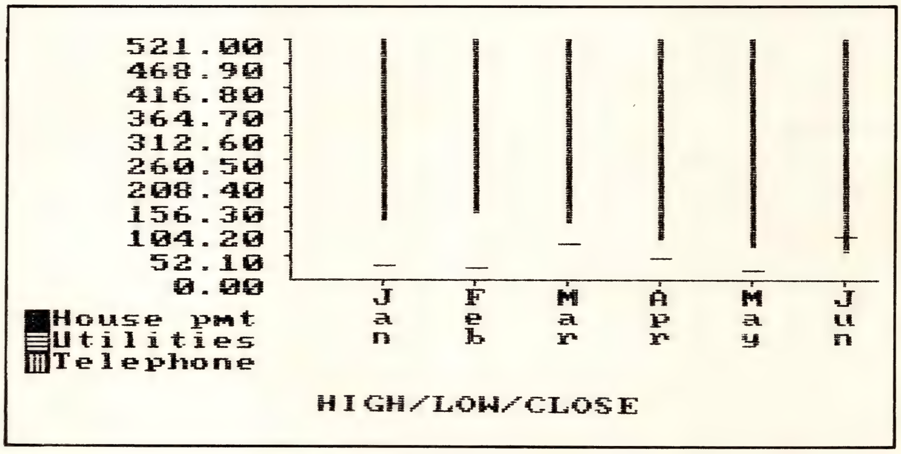
One shortcoming of Stretchcalc is its apparent inability to accept input during one of these user-defined commands. For example, it is not possible to set up a data-entry routine in Stretchcalc of the sort: accept data, move to the right, accept data, move to the right . . ., and so on. But overall, the user-defined commands are a helpful and easy-to-use feature.

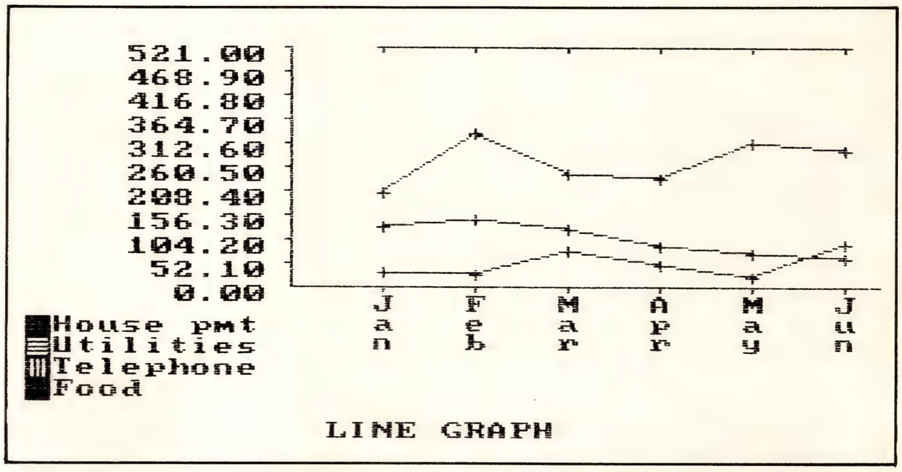
General

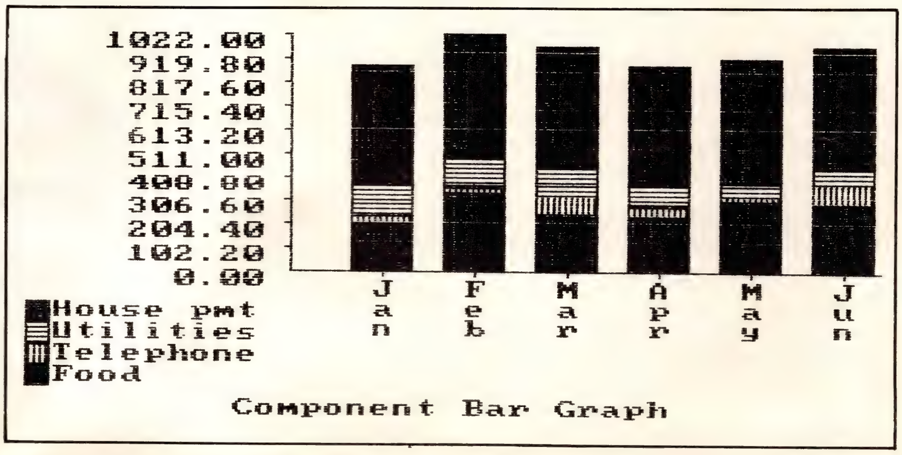
The documentation lets the product down somewhat, as it was printed on a dot-matrix printer and there are even several typographic errors.

In addition, the print is small (it has been photo-reduced) and the copy I had was somewhat pale and difficult to read. There is a computerised demonstration/tutorial supplied with Stretchcalc. However, the only mention of it is









Graphs produced by Stretchcalc.

in the table of contents (which refers you to an appendix).

The Lotus 1-2-3 tutorial is much more extensive, but I found the Stretchcalc demonstration cases very helpful. There is even one feature I thought was missing from the Lotus 1-2-3 tutorials.

Stretchcalc allows users to exit from the demonstration, but still have access to the case material upon which they can experiement until satisfied they have mastered the feature.

That Stretchcalc is given away free with the purchase of Visicalc, for the IBM PC, demonstrates two points:

- Visicorp is not going to sit back and be beaten by Microsoft or Lotus Development Corp without a fight. VisiCorp will make all efforts to enhance their products even when it means supporting someone else's package to achieve this goal.
- The other products (in the main, Multiplan and Lotus 1-2-3) have taken a large share of what was formerly a Visicalc-dominated market.

This combination of Visicalc and Stretchcalc has been packaged for the IBM PC as Visicalc IV. It must be remembered that one of Visicalc's greatest strengths is that it is part of a range of Visi products and third-party produced utilities.

This, coupled with the extra strengths provided by Stretchcalc, allow me to recommend, without hesitation, Stretchcalc to anyone who has bought an IBM Visicalc. Certainly, Stretchcalc adds a further dimension to one of the most widespread software computer packages ever sold. ☐

australian
Micro
computer magazine
Software Report Card
STRETCHCALC

	Poor	Fair	Good	Excellent
Performance	☐	☐	☑	☐
Documentation	☐	☑	☐	☐
Ease of Use	☐	☐	☐	☑
Error Handling	☐	☐	☑	☐

System Requirements:
- IBM PC
- Visicalc.

Price: Free with Visicalc
$149 separately.

Distributed by:
Imagineering,
3/479 Harris Street
Ultimo 2007.
Telephone: (02) 212 1411.

HOME, PERSONAL, SCHOOL and BUSINESS COMPUTERS

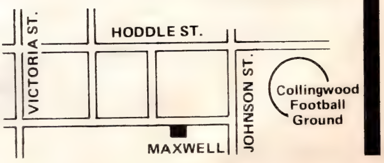
commodore
VIC 20 & 64

sirius
Chameleon
IBM-PC COMPATIBLE PORTABLE

Melbourne's largest range of programs
Friendly expert advice and service
Easy access — plenty of parking

OPEN SATURDAY MORNINGS
Established 1968 – Member of O.E.I.A.

Maxwell OFFICE EQUIPMENT (VIC) PTY. LTD.
162-164 NICHOLSON ST. ABBOTSFORD
(near Hoddle Street) Telephone: 419 6811



Enter M017 on Enquiry Card

MICRO-EDUCATIONAL PTY LTD

17 PARK ROAD,
GARDEN SUBURB, NSW 2288

Phone: (049) 43 6805
(049) 43 0624

SPRING CATALOG NOW AVAILABLE

AMUST DT-80 PRINTER

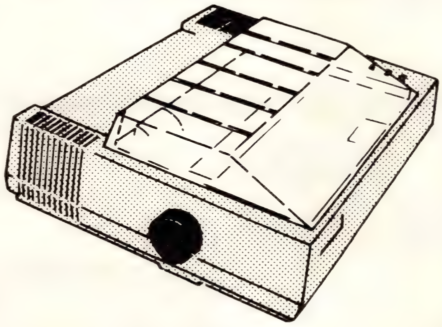
A Runaway success, selling 500 units per month!

NOW REDUCED BY **$100**

FEATURES:
Superb print quality . . . 80 cps bidirectional . . . bit image graphics . . . full descenders . . . italics . . . double density and double pass . . . normal, compressed and double width . . . friction AND tractor . . . multi-strike carbon ribbon cartridge . . . low-cost removable print head . . . quality construction.

PRICE:
Parallel: **369** ex tax
419 inc tax

Cables available to
suit most computers **$35**
MICROBEE CABLE **$50**



VISION—128

128K MEMORY EXPANSION CARD

To enhance the information throughput performance of your Apple II or IIe, this card cannot be beaten (except by our 256K Memory Expansion Card!). The 128K Memory Expansion Card releases you from the restrictions of the limited amount of memory available in the basic Apple, providing a dramatic speed increase for spreadsheet, word processing, graphics and data base applications.

Most business programs require relatively large amounts of information to be processed, eg multi-page documents in word processing, multi-period models in spreadsheet analysis, and sizeable data bases.

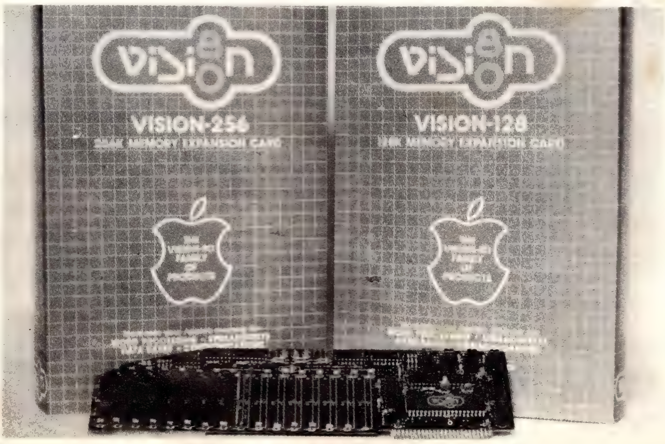
By more than tripling the RAM memory space available to your programs, the 128K Memory Expansion card allows far more information to be processed directly in memory, and hence reduces the time taken for relatively slow diskette storage and retrieval functions.

The 128K Memory Expansion Card is supported by a large range of proven utility software and programming aids (available as the optional VISION-128 UTIL program disk), and comes complete with a detailed user guide.

345 ex tax **395** inc tax

256K CARD
$495 ex tax **$575** inc tax

VISION 80
80 Column Card for
Apple II and Apple IIe
179 ex tax **199** inc tax



ROCKBOTTOM PRICES

aren't everything.

We also offer:
- **Full workshop servicing**
- **6 Monthly hardware warranty**
- **Money-back warranty**
- **Overnight delivery**
- **Product knowledge**
- **Phone ordering and advice**

If you're buying by phone or mail then deal with an established, reputable company with at least 5 years trading, and turnover large enough to support service staff. That's us. We're also the cheapest because we're the biggest and we buy in **bulk.** Try these "special-negotiation" bulk-buy friend-of-the-family specials.

	Tax Ex	Tax Inc
Control Data Disks	32	35
In hundred lots	280	310
Sanyo Green Screen	249	295
MICOM JOYSTICK	40	45
ATLAS DISK DRIVE	325	365
VISION 80 COLUMN	179	199
EXTENDER PORT	30	35
AUTO ICE PRINTER CARD	99	110
Detachable APPLE KEYBOARD (IBM PC style)	199	225

STOP PRESS!

Just released. Dennis O'Keefe's Automatic Ice RS232 Modem. Features Auto Answer, Auto Dial Christansen Protocol error checking, 300 and 1200/75 band full duplex, microprocessor controlled, Teletext capability, etc., etc., $259 ex tax, $299 inc tax.

TO ORDER any product just phone and ask for me, George Parry. You can pay by Bankcard over the phone or send a cheque. Delivery is overnight anywhere in Australia by Wards courier ($5 or $8 for a printer) or $3 for regular post. If you're not absolutely delighted with the quality of the goods* you can send them back within 10 days for a 90% refund less freight. Full warranty applies for 6 MONTHS!

MORAL. You **can** save real money (and time) buying by phone order. You can also burn your fingers dealing with fly-by-nights. Deal with the biggest. We're also the cheapest.

* Only applies to Hardware.

Enter M028 on Enquiry Card

One in 10 Australian schoolchildren has a reading disorder. Direct Helper is a teaching method to develop reading skills in the non-reader or backward reader. Using a personal computer, the Australian-designed system employs an educational and fun approach to teaching reading and spelling. Dr Geoffrey Tobias talks about Direct Helper.

Direct Helper to the rescue

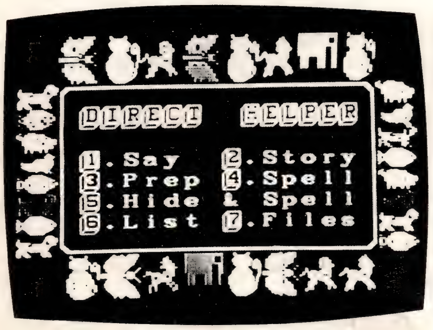
DIRECT Helper had its beginnings in 1978 when Sydney research scientist John Pollard set out to help his 10-year-old son learn to read. Peter Pollard was described by psycologists as having a severe dyslexia, a "word scrambling" problem.

By the time Peter had reached Grade 4, he had read almost nothing. Special school for a year improved his poor self-image, but he still could not read.

As personal computers were becoming more widely available, Pollard decided the new technology might be able to help his son. He took up the challenge, and spent thousands of hours developing Direct Helper.

Using trial and error, he perfected a method that would retain students' attention, teaching them to recognise words they saw in scrambled form. Peter made excellent progress, went on to high school and his reading now is almost normal.

Dr Pollard delivered a paper on his method to an international conference in Melbourne in 1980, and the resulting publicity saw him inundated with appeals from parents and teachers struggling with dyslexia. He decided to make Direct Helper available on a wider scale.



```
DIRECT   HELPER

1.Say    2.Story
3.Prep   4.Spell
5.Hide & Spell
6.List   7.Files
```

Method

The Direct Helper scheme consists of five computer programs and an accompanying *starter* set of graded words for immediate use.

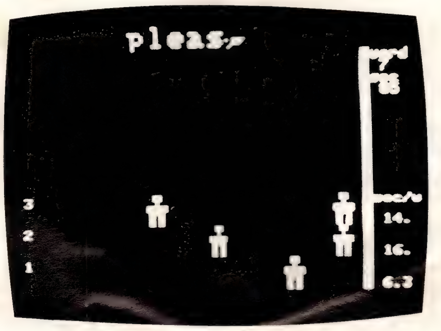
Four of the programs are used by the student:

- The Say program for word reading.
- The Story program for story reading.
- The Spell program for spelling.
- The Hide and Spell program for advanced spelling.

The fifth program Prep, is a simple word processor system enabling parents or teachers to enter new word lists or stories when the student has completed the *starter* list of words.

Say Program:

In this program, the *starter* words, as well as any new set of words entered by the parent or teacher, are progressively built up on the screen, letter by letter or syllable by syllable, as if the student was writing it himself. Example: h hoo hood.

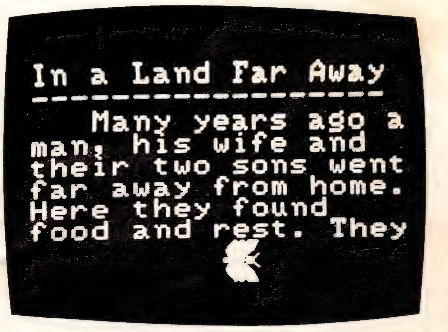


This progression virtually eliminates the possibility of word scrambling, so common among problem readers. A starter kit of 4000 words is supplied with the program. As the word appears, a small rocket ship image travels with the letters from left to right.

The student tries to read the word out loud, presses a key and hears the word enunciated correctly on a cassette recorder. As the student reads through the list of words, more and more moving robot figures appear in a line on the screen, and a clock ticks away on the right of the display. This provides an incentive for the student not to delay unduly and provides a score to be bettered next time.

Story program:

The Story program builds on skills acquired in the Say program to teach the student to read whole sentences and stories, and to encourage good reading habits. The student reads along with an animal figure that moves below the appropriate line of the story at a speed the user determines.



```
In a Land Far Away
------------------
     Many years ago a
man, his wife and
their two sons went
far away from home.
Here they found
food and rest. They
```

The animal thus "reads" the story as each line appears on the screen and provides an incentive for the user to keep up at the chosen speed and to always read from left to right. At the end of each "page" of the story, the student's

Computerm

Professionals in Computer Peripherals, Communications and Supplies.

Before purchasing a computer for either home use or for your small business, we invite you to see our exciting range of **EAGLE COMPUTERS.**

EAGLE 8-BIT MACHINES

The **EAGLE** range of 8-bit machines start with the **EAGLE 1** and go through to the **EAGLE 4.** Each **EAGLE** computer features the Z80A microprocessor, has 64K memory, 2 serial and 2 parallel ports, 75 key station keyboard, 32 programmable function keys and comes complete with CP/M Operating System, SPELLBINDER, Word Processing Package, ULTRACALC Financial Spreadsheet and CBASIC Programming Language. Disk Storage is as follows: **EAGLE 1,** 390Kb; **EAGLE 2,** 780Kb; **EAGLE 3,** 1.6Mb; **EAGLE 4,** 10.8Mb.

EAGLE 16-BIT MACHINES

Choice of **EAGLE** 1600 series using the 8086 microprocessor or the **EAGLE** range of PCs using the 8088 microprocessor.

All 16-bit machines supplied with MS-DOS and CP/M-86 Operating Systems as standard. SPELLBINDER Wordprocessing Package, ULTRACALC Financial Spreadsheet also included at no extra cost. Comprehensive 12-months warranty on all **EAGLE COMPUTERS.**

For brochures or for a free demonstration call in at:

COMPUTERM
27 Oxford Close
LEEDERVILLE WA 6007.
Phone: (09) 382 1744 Telex: 92573

Enter M048 on Enquiry Card

MS-DOS FOR KAYPRO!! IBM-PC DISK COMPATIBLE

We now have available 8088 Boards with 256K for the Kaypro to allow it to read IBM-PC disks and run non-graphic IBM-PC software!!

Package includes MS-DOS, MS-BASIC and IBM-PC filter program to eliminate or interpret non-executable IBM-PC graphics.

$850 plus tax (fitting extra).

APPLE II USERS 8" DISK DRIVES!!!

1.2Mb per drive

DOS 3.3, CP/M and PASCAL cased drives, power supply cable and controller.

Patches for each operating system included.

$2499 including Sales Tax.

MICRO EDP & HARDWARE
9A-1 Leura Ave, Claremont
Western Australia 6010
Telephone: (09) 384 5511

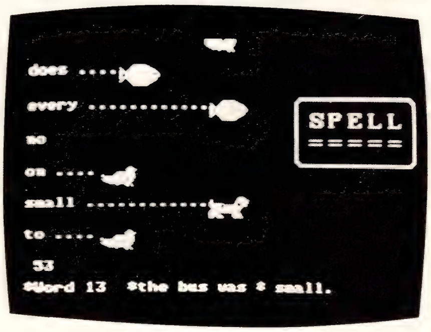
Enter M055 on Enquiry Card

reading speed for that section is calculated.

Spell program:

Using the Spell program, the student learns to spell three different ways. Firstly, in Spell's teaching mode, the recorded voice says and spells the word, and the pupil types it in.

In the second mode, the testing mode, the recorded voice only says the word, and the student tries the spelling himself. The third mode, the story mode, has the words used in the teaching and testing modes placed in the context of a story.

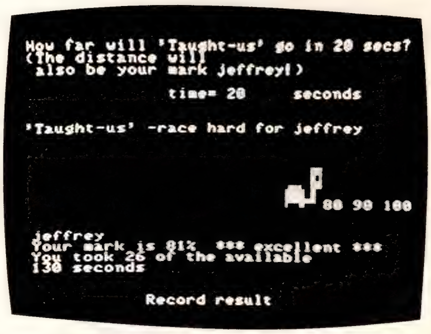


```
does ....
every .............
no
on ....
small .............
to ....
 53
$Word 13  $the bus was $ small.
```

The child reads the text until he comes to a pause in the story, whereupon the recorded voice says the word to be spelled, the child spells it and the story continues until the next pause.

Hide and Spell program:

Hide and Spell builds on the Spell program. From a group of four words the student has to pick out the one word that is spelled incorrectly and respell it correctly. The countdown clock and the reward system of the Spell program also are featured in this program.



```
How far will 'Taught-us' go in 20 secs?
(The distance will
 also be your mark jeffrey!)
                 time= 20      seconds

'Taught-us' -race hard for jeffrey


                                  80 90 100

 jeffrey
 Your mark is 81%  *** excellent ***
 You took 26 of the available
 130 seconds

                Record result
```

Personal involvement

Struggling readers, whether dyslexic or not, generally have little expectation that they can accomplish what they have so often failed to do.

A vital element in the success of Direct Helper is the role of the compassionate supervisor — a parent, teacher or volunteer. The supervisor sits through the sessions, with the student at the computer, creating an atmosphere of acceptance and progress.

The student is encouraged to develop the self-esteem that grows as he or she begins to succeed. The supervisor also prepares additional personalised teaching material for the programs.

■ *Direct Helper is designed for use on the Apple II personal computer, the Tandy TRS80 model III, and the Dick Smith Computer. The Apple version costs $A375, the Tandy and Dick Smith versions are $A250 from Sydney company Dataflow Computer Services.*

Practical solutions

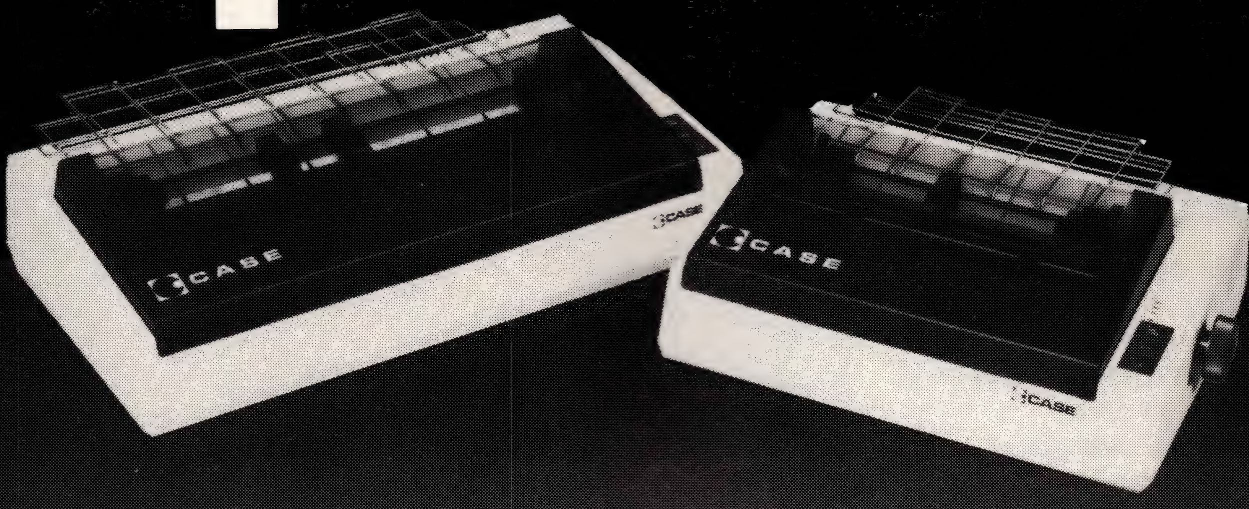
ST PATRICKS College at Campbelltown, NSW, has been using Direct Helper for three years, with some Year 8 students improving their reading level by 48 months in four terms. Full-time voluntary teacher Margaret Stockwell said: "Direct Helper holds the student's interest, develops their concentration and, as a result, increases their reading level".

Eight students from a nearby school for the handicapped, Dei, also are taking part in the St Patricks program. Their success has been such that some may be able to attend a conventional school.

Mrs Robyn Fulton, of Baulkham Hills in Sydney, spent nine hours each week using Direct Helper with her 13-year-old daughter, Corinne, who was having serious trouble learning to read and spell. After six weeks, Corinne was tested at her school — Hillcrest Public School — where she was found to have made six to nine months progress.

At the Covenant Christian School in the Sydney suburb of Belrose, a pilot scheme using Direct Helper was run for nine consecutive weeks. One 11½-year-old boy had a reading age of seven years 10 months when he began the program helped by a parent. At the end of the trial, his reading age had improved by a year and four months.

Speed up 60%.



The CASE DELTA Printers deliver 160 characters per second for only $795

For not more than you'd pay for a 100 CPS printer, the new Deltas deliver an amazing 160 CPS.

Not that we sacrifice anything on features — our standard machine includes both a Centronics parallel and an RS-232 serial port. Paper handling is made easy with single sheet, continuous and roll paper capabilities. And printing applications are virtually endless with graphics, correspondence quality, proportional and Italic character sets.

What's more, near Epson compatibility means that our printer and your computer will be talking the same language.

The Delta is available in both 80-column and 136-column carriages and is priced at just $795 and $1195, respectively.*

The new Delta — a CASE for all times.

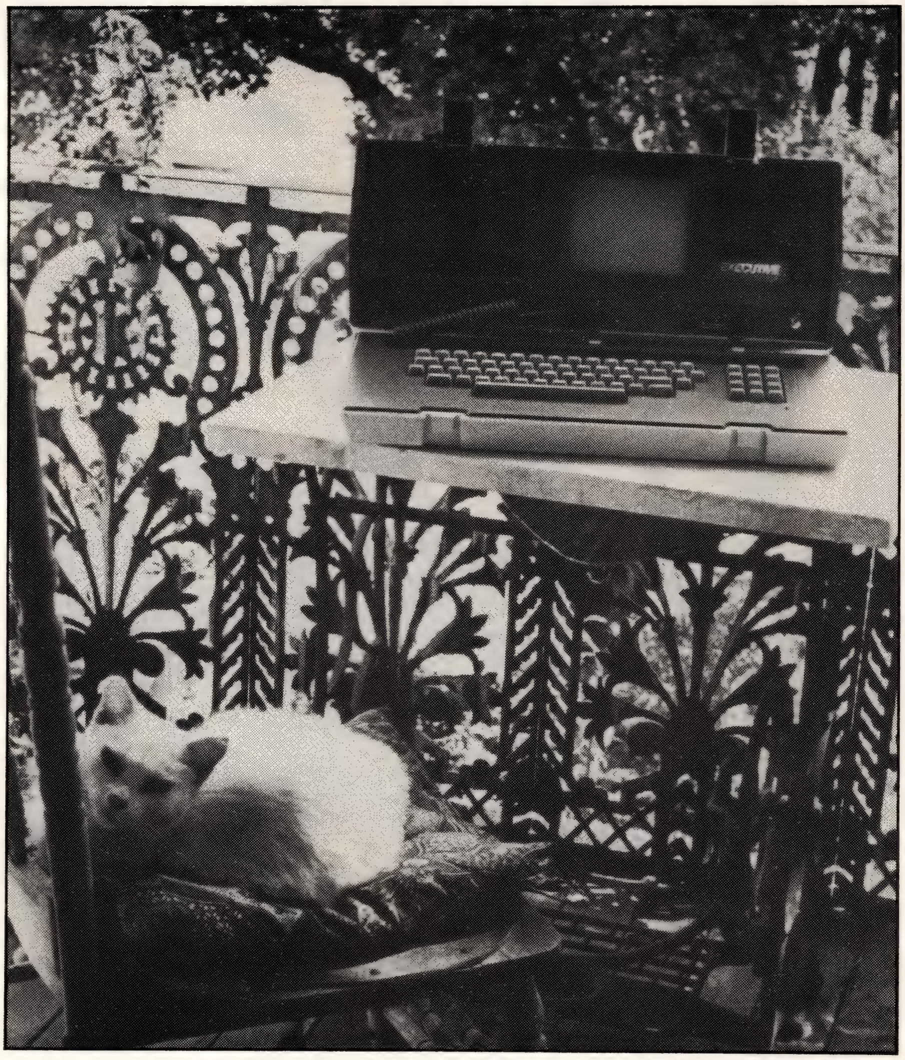
*Please add sales tax where applicable.

CASE

CASE Communication Systems Ltd.

SYDNEY: 1-3 Rodborough Rd., Frenchs Forest, N.S.W. 2086. Ph. (02) 451 6655. MELBOURNE: Ph. (03) 529 7644. BRISBANE: Ph. (07) 221 4727.

Enter M038 on Enquiry Card



Adam's definitive Executive

Despite the demise of Osborne Corporation, the Executive I offers value for money and some interesting design techniques. Ian Webster reports:

ADAM Osborne's involvement in the microcomputer industry before 1980 consisted of his monthly column 'From the Fountainhead' in *Interface Age* and his computer book company, since bought by McGraw Hill, which publish- an excellent series of technical and semi-technical books.

At the 1980 West Coast Computer Fair, he met Lee Felsenstein, an engineer interested in convivial design, designing affordable computers for the public rather than for elegance or performance. Felsenstein was a founding member of the Community Memory Project, a continuing project to implement street-level, public access computer-based community information services, had designed peripheral boards for the Mits Altair and had designed the well-regarded Sol microcomputer for Processor Technology.

Osborne expressed his vision of a "Volkscomputer" — portable, cheap and easy to use to Felsenstein who began building the Osborne I using Community Memory facilities.

Their aim was to produce a safe, reliable, excellent-value-for-money computer that did not depend on single-source components.

Felsenstein designed the famous 5in 52-char sceen, dual 100K disk drive, portable computer. Osborne bundled the applications software and marketed the product.

In retrospect, it was all very obvious, and the computer acquired a large user base of professional people who had a need for personal information management. Many were writers.

Osborne Corp implemented most of the software applications for the computer and provided a range of hardware options including screen enhancements and disk capacity upgrades.

The second Osborne computer, the Executive I, was released late this year, almost two years after the first.

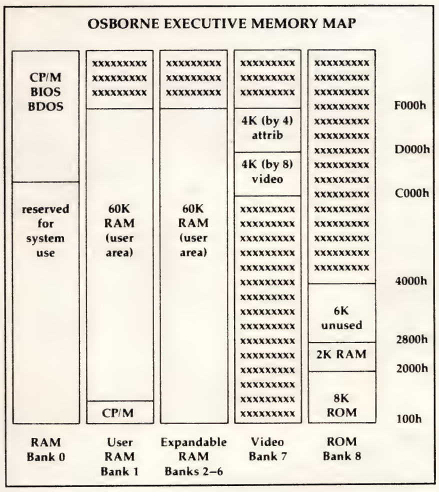
Lee Felsenstein was not heavily involved in the project, and designed the 8088 add-on board that was to have provided some level of IBM-PC compatibility. This board may never be released.

The Executive I is similar in concept to the Apple III. Both products were designed as extensions to successful products with compatibility across the main design range. Both are good machines, underrated because design enhancements boxed the machines into a corner where there is little hope of further development. Most of the enhancements are subtle, based on clever memory management and screen handling.

The Executive is based on a 4Mhz Z80A processor with 124K-bytes of RAM, 8K-bytes of ROM, 7in video screen monitor, dual double-density 185K disk drives, two RS232 ports, IEEE-488 centronics port, composite and external video connectors, and has the keyboard as the Osborne I.

Memory management and screen handling are the basis for the Executive's enhancements to the Osborne I design.

Memory is managed as 9 64K-byte banks. Bank 0 is used for CP/M Plus and system use, Bank 1 provides 60K-bytes of user space, Banks 2-6


OSBORNE EXECUTIVE MEMORY MAP

are not supported, Bank 7 has 4K-bytes of screen memory RAM and another 4K-byte block for the screen attributes and Bank 8 has the 8K-byte system ROM and 2K-bytes of RAM for temporary system storage. When the processor writes to Bank 8, the bottom 4K-bytes of ROM is replaced with 4K-bytes of RAM that contain two character sets.

The banks are transparent to each, and mapped on top of each other according to the bank priority bits in a status byte, providing the composite 64K-bytes of RAM that the processor addresses.

The system uses soft character sets that are loaded from disk during system boot, each character cell is defined using 12 bits. Seven bits are used for the Ascii character code with attribute bits for intensity, underline, blink, font selection, and reverse.

The Executive implements a 12-bit block move for video memory so the attributes can be moved with the character code. An 80-col display is provided on a 7in screen, with graphics available by using the CHARGEN utility to define graphics characters.

The system is configured to emulate a Televideo 912 terminal, but can be changed to emulate other terminals.

The software provided with the machine includes the first popular release of CP/M Plus, designed for Z80-based computers with more than 64K-bytes of RAM memory. The full range of CP/M Plus utilities are provided, including the assemblers MAC and RMAC.

SETUP, a utility to configure the system parameters of the Executive, and CHARGEN to modify the RAM-based character sets are included. Wordstar V3.3 and Mailmerge are provided as well as Wordstar install, which enables the terminal, printer and system parameters of Wordstar to be modified.

Sorcim's Supercalc V1.12 spreadsheet is included, together with Microsoft Basic V5.21 and CBasic 2. Personal Pearl, a data management package — that allows users to create screen forms, then manage them in a database, is included. Part of the UCSD p-System, including the Filer, Editor and a print utility are provided so UCSD Pascal programs can be used on the Executive. The full development system included the programming language Pascal, was to be released later.

This package of industry-standard software only requires spelling program and communications programs to be complete.

Osborne has finally produced an excellent set of manuals. There are projected Executive users. There are six manuals; the first five are tutorial, aimed at introducing the user to the machine by using it.

Detailed information about commands and system information is collected in a reference manual. The documentation is readable, well presented and entirely adequate.

While the applications package documentation is not as detailed as that usually supplied by software manufacturer, Osborne supports the view that his is more suitable for first-time users, and as users become more sophisticated they can access the wide range of specialised books available for these industry-standard packages.

System detail should be sufficient for programmers wanting to configure packages for the Executive, although software developers, always wanting more information, will be disappointed. The UCSD p-System documentation only covers the filer, editor and print utility.

Service in Australia will be available from Hills Industries and President Computers. Osborne's policy of only using standard components should mean that the computer can be fixed by any microcomputer technician.

The Executive has continued Osborne's efforts to provide portable, cost-effective, useful computer power. The system is possibly the definitive bundled product, and a lesson for other manufacturers, particularly home computers marketeers.

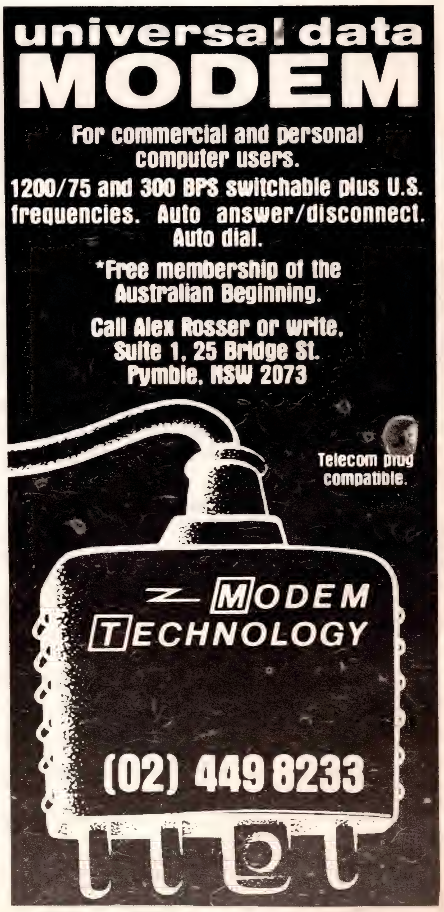
At the discounted price of less than $A2400, the Osborne Executive I has to be the best value buy of 1983. ☐

JUPITER MICRO CRAFT
MICRO COMPUTER SYSTEMS
AND SOFTWARE (Since 1979)

Suppliers of:
Apple, Basis Medfly,
Morrow Micro Decision,
Access Portable,
Pericomp Pied Piper,
Discovery Multiprocessor
Custom Programming for CP/M and Apple.
Specialists in:
Small Business Accounting/
Inventory, Order Processing
Billing/Accounting systems for
Milk Vendors and Newsagents.
Installation, Training and Support second to none.

SIMPLY THE BEST
Telephone: (09) 450 5954
37 Ley Street, COMO 6152.
Western Australia

Enter M050 on Enquiry Card


universal data
MODEM
For commercial and personal computer users.
1200/75 and 300 BPS switchable plus U.S. frequencies. Auto answer/disconnect. Auto dial.
*Free membership of the Australian Beginning.
Call Alex Rosser or write.
Suite 1, 25 Bridge St.
Pymble, NSW 2073

Enter M051 on Enquiry Card

The NEC Advanced Personal Computer
FROM
COMPUTER GALERIE

By now your friends will have recommended NEC.
Here are 10 good reasons to finally buy from Computer Galerie.

- You need the programs to suit you. Computer Galerie has a program range beyond your dreams. MSDOS and CP/M 86.
- You need programs to suit your industry. Computer Galerie employ men with more than 15 years experience to tailor to your industry.
- You need stationery with free delivery.
- You need a 12 month warranty.
- You need reliability.
- You need convenience.
- You need manufacturer standard servicing.
- You need a proven Award Winning System.
- You need an established dealer you can trust.

NEC ■ COMPUTER GALERIE

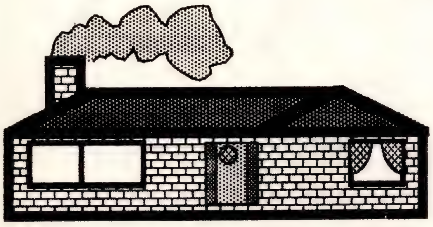
SEND COUPON TO: 66 WALKER STREET, NORTH SYDNEY 2060.

I need more Information & Prices.
Name ....
.... Telephone ....
Street ....
Suburb .... Post Code ....
Industry ....
I need to do ....

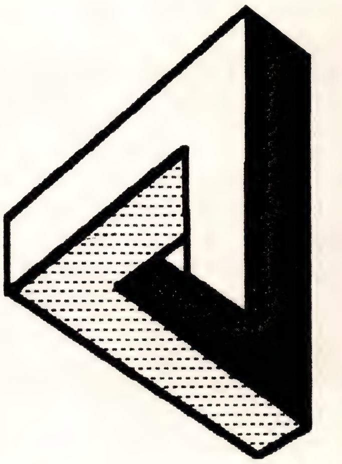
OR CONTACT
DAVID DIPROSE
ON (02) 929 5497.

Enter M024 on Enquiry Card

Despite some frustrating quirks with Apple's beauty, Tony Smith has had an enjoyable and exciting time . . .



Living with Lisa



APPLE's promotional videotape had done its work. It was time to put together a comprehensive business plan for a major systems development project, a job which could obviously be best done entirely on Lisa.

It has Lisacalc for the financial planning, Lisawrite for the unavoidable words, Lisaproject and Lisalist for management information processing, and Lisagraph and Lisadraw to make such a presentation attractive and readable. So a Lisa was obtained from Electronic Concepts' since-closed Melbourne office for this review.

The Lisa was also made available for Computer Month (non-Victorians read Information Technology Week) activities at Public Access Computing and at Lorne Consolidated School.

Apple Australia's Melbourne office helped out with a hard-to-get printer interface card and cable, as well as a replacement machine for several days, and Melbourne dealer Metroplitan Business Machines made one of its machines available to finish the review.

Impressions

How do you value the first embodiment of a revolutionary vision? Lisa does things which are otherwise impractical, then stops tantalisingly short of what seems, in hindsight, obvious extensions of its capabilities.

Only two possible complaints should carry any weight when evaluating Lisa's utility: its lack of an accessible development environment, and the annoyingly long time taken by some essential functions. I discuss the long-term implications of those limitations at length later.

Of the six supplied software packages, two are accepted as being responsible for most Lisa sales: Lisadraw and Lisaproject. Both provide Lisa with important competitive advantages, but, surprisingly, they make only limited use of Lisa's much-heralded approach to data integration.

Lisaproject is a reasonably friendly semi-graphical approach to the essential, but often misunderstood, critical path method of project control. Its very availability is revolutionary, but once you know it exists, it is all too easy to become blase and wish its use of graphics was even more intelligent and wider.

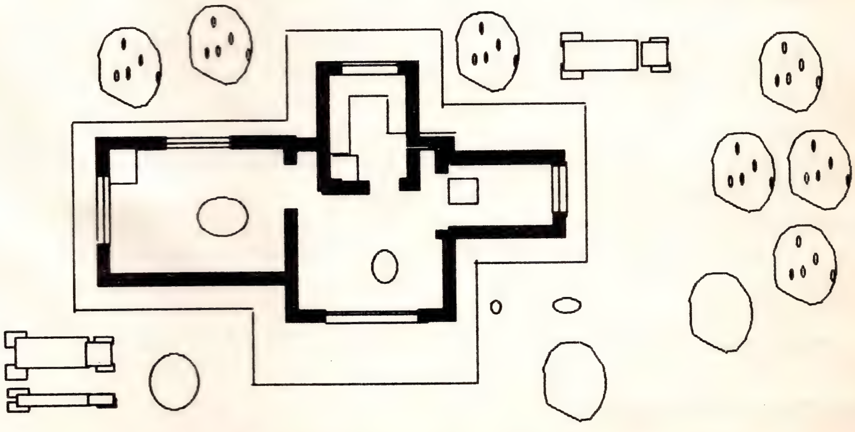
Lisadraw brings many features of sophisticated graphics systems into the price bracket of better personal computers. It is absolutely wonderful for most posters, maps, plans and diagrams — provided you can restrict your imagination to things flat and rectangular.

Its basic functions are so fast and easy to use it is possible to assemble quickly drawings so complex that they take quite a bit of time to regenerate when they are manipulated. Lisawrite provides an easy introduction to word processing.

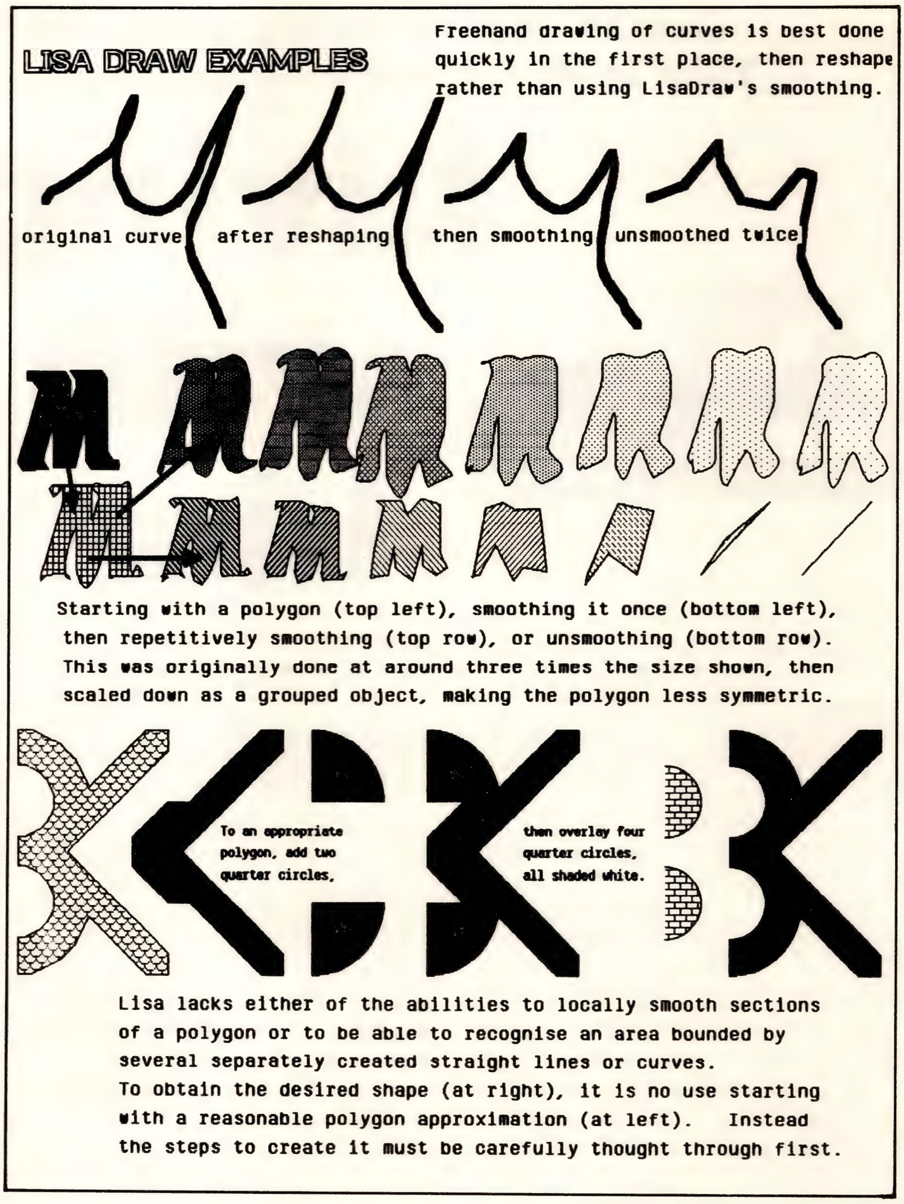
For serious text processing, it has several useful features: variable type sizes and styles including some suitable for headlining, and formatting instructions seemingly attached to and thus variable for each paragraph. But these may be outweighed by its relatively limited total range of features and by the overheads of working with text in a dedicated graphics environment.

Lisacalc does what any good spreadsheet should, providing adequate features for tabulation and manipulation of data. Its strong data paths to Lisawrite and Lisagraph are its key assets.

The ability to display and paginate based on independent choices of 10, 12 or 15-pitch type gives the operator comfort and power. Lisagraph provides standard commercial presentation



proposed houseplan for mr&mrs jones


LISA DRAW EXAMPLES
original curve
after reshaping
then smoothing
unsmoothed twice
To an appropriate polygon, add two quarter circles,
then overlay four quarter circles, all shaded white.

Freehand drawing of curves is best done quickly in the first place, then reshape rather than using LisaDraw's smoothing.

Starting with a polygon (top left), smoothing it once (bottom left), then repetitively smoothing (top row), or unsmoothing (bottom row). This was originally done at around three times the size shown, then scaled down as a grouped object, making the polygon less symmetric.

Lisa lacks either of the abilities to locally smooth sections of a polygon or to be able to recognise an area bounded by several separately created straight lines or curves.
To obtain the desired shape (at right), it is no use starting with a reasonable polygon approximation (at left). Instead the steps to create it must be carefully thought through first.

graphics only and a data pathway from Lisacalc to Lisadraw.

It was only used for evaluation, which is more than can be said for Lisalist or the recently released Lisaterm communications feature. The icon-based file management system modelled on a desk top is a major advantage in its ability to jump the user straight past the pros and cons of operating systems, often a major obstacle to wider utilisation of conventional systems.

Tidying the "desk top" by straightening icons, wastebasket, calendar and clock are all useful familiarisation machanisms. After identifying the equivalence between Lisa's file management and a conventional sub-directory tree structure, the experienced computerist can become frustrated by the absence of some features he has become used to having in such environments.

While it is impossible to stop using the mouse, and it becomes easier and easier to control accurately, there is nothing about that simplistic little device which is in any way convincing that it is the right choice for location and motion input. The effects Lisa is able to push out of the simple little old Apple][dot matrix printer are truly amazing.

Through others' eyes

The most informative thing about Lisa is the way it batters down many individuals' trepidations about facing a computer. The desk-top model is recognisable instantly and friendly to people who had throught they could leave computers for the next generation — of humans, that is.

Then Lisadraw really hooks them. Lisa's name is unquestionably the correct gender.

The inescapable masculine orientation of hacker-style computer is totally overcome, with women of all ages able to relate effectively to Lisa. Comparing Lisa to other micros is like comparing Pacman to Space Invaders.

For Computer Month activities and other visitors, the entree to Lisa has been Lisadraw. Their drawings have ranged between putting their names in a nest of shaded borders, similar poster like notices, and freehand pornographic sketches.

The other outstanding tool, Lisaproject, lay beyond the appreciation of those not involved directly in business plan preparation.

System limitations

Lisa is targeted at users who will have little or no understanding of the design complexities that lie behind it. Those people are also likely to have less patience for some of its quirks than would a person with a real understanding of all the processing needed to drive the visible effects.

Despite Lisa's 1M-byte main memory being unprecedented in personal computing, it is probably its greatest limiting factor, although its underlying development environment could prove to be the weakness which is hardest to overcome. The suggestion that Apple will soon announce a 4M-byte version using 256K-bit chips could make a significant difference with the programs and data for several windows able to be kept in memory without the noticable delays needed for them to be repetitively loaded to and from disk.

The huge software research and development effort that has gone into providing Lisa's features by conventional programming techniques using a language described as Pascal with C extensions, could prove to be Apple's white elephant. It is proving to be a major exercise for Apple to provide Lisa with an end-user application development capability which will interface sensibly with the specific tools already provided.

It would be reasonable to anticipate that those same obstacles will deter Apple from any serious attempts to provide a continuing upgrade path for those existing tools. The friendly graphic Lisa human interface is based on concepts developed at Xerox's Palo Alto Research Centre in California, as an integral part of the its Smalltalk programming language.

As well as not having a development environment, each Lisa tool has its own limitations which usually can only be surmounted by intelligently combining a series of steps that are not immediately self evident. Because it is most user's first contact with Lisa, it is important that Lisadraw's limitations are discussed more fully.

Two big obstacles to producing totally flexible graphics with Lisadraw are its preoccupation with fixed orthogonal axes and its inability to logically connect separately created shapes. Any object, or spatially connected set of objects, are manipulated based on the smallest horizontal or vertical rectangle which encloses the shape.

It is easy to scale independently any shape parallel to its X and Y axes, but completely impossible to separately scale opposite edges in the way required to produce any illusion of perspective. Thus every ellipse or quarter ellipse has its major and minor semi-axes restricted to horizontal and vertical orientations.

While free-hand curves, polygons and the powerful reshaping function are sufficient to create many complex curves, more could be done given abilities to segment and combine shapes. Smooth and unsmooth, when applied to whole curves, are of limited value, except that it is practically essential to unsmooth a freehand curve once before reshaping it so as to get its data points far enough apart to work with.

The inability to logically link various lines to define a single shape for shading is possibly Lisadraw's biggest source of frustration. A similar effect potentially could be obtained if it was possible to smooth or unsmooth chosen segments of freehand lines or polygons.

The relatively course position grids applied when drawing polygons or moving figures can be used to advantage to provide accurate positioning and usually can be overcome by the various alignment functions or by drawing a shape much larger than life and then compressing it. Lisadraw appears to store polygons and curves by recording the starting co-ordinates and then step sizes along the length.

Compression of these figures often causes a disproportionate gap to appear between the start and end of such shapes, especially when they originally appeared to join.

Utility

Lisa does things that have not been reasonably available before. Those things are particularly useful in the environment for which it was designed, managers involved in the preparation of well-presented reports. Lisa also breaks down many barriers which keep people apprehensive about computers.

Performance

Lisa's software and some of its designers' choice of hardware components compromise the system's performance. It is uncomfortably slow in some key areas, including: movement to positions off the screen in large graphics, initial loading of the programs to operate the various tools even before any data is entered, and in its high-quality dot matrix printing.

Ease of use

Lisa redefines the concept of ease of use. It should be marked off the scale beyond excellent. There is so much it does obviously, that there is some risk of overlooking other useful features.

Support

Virtually everything conceivable is in place in the way of documentation, training, error handling and service. The support system, however, has not really been geared up yet to the level it would have to reach to support large numbers of users, and some of that support, in the first instance, falls on established Apple dealers who have been used to a very different environment.

Summary

Lisa exemplifies one of the future directions of computing. The number of others rushing to imitate is a fair measure of its importance.

For Apple, it has been firstly a corporate marketing exercise and in that it has unquestionably succeeded. For anyone who has a real need for its special talents, it is worth a lot more than Lisa's recently reduced price.

But its lack of a user application development environment is delaying the opportunity it has to compete with ordinary personal computers. And by the time it can, the design limitations to its performance may open the way to competitors.

Test Lisas supplied by Electronic Concepts Pty Ltd, 55 Wentworth Avenue, Darlinghurst, NSW 2010. Tel: (02) 212 2833; and Metropolitan Business Machine Co Pty Ltd, 338 Sydney Road, Coburg, Vic 3058. Tel: (03) 383 2222.

TECHNICAL EDITOR

Australian Micro Computer Magazine

Australian Micro Computer Magazine requires a Technical Editor with extensive micro computer experience.

The successful applicant must be literate and have an obsessive interest in documenting the micro computer industry.

Publishing experience is not essential.

Contact:

Australian Micro Editor

Ian Webster

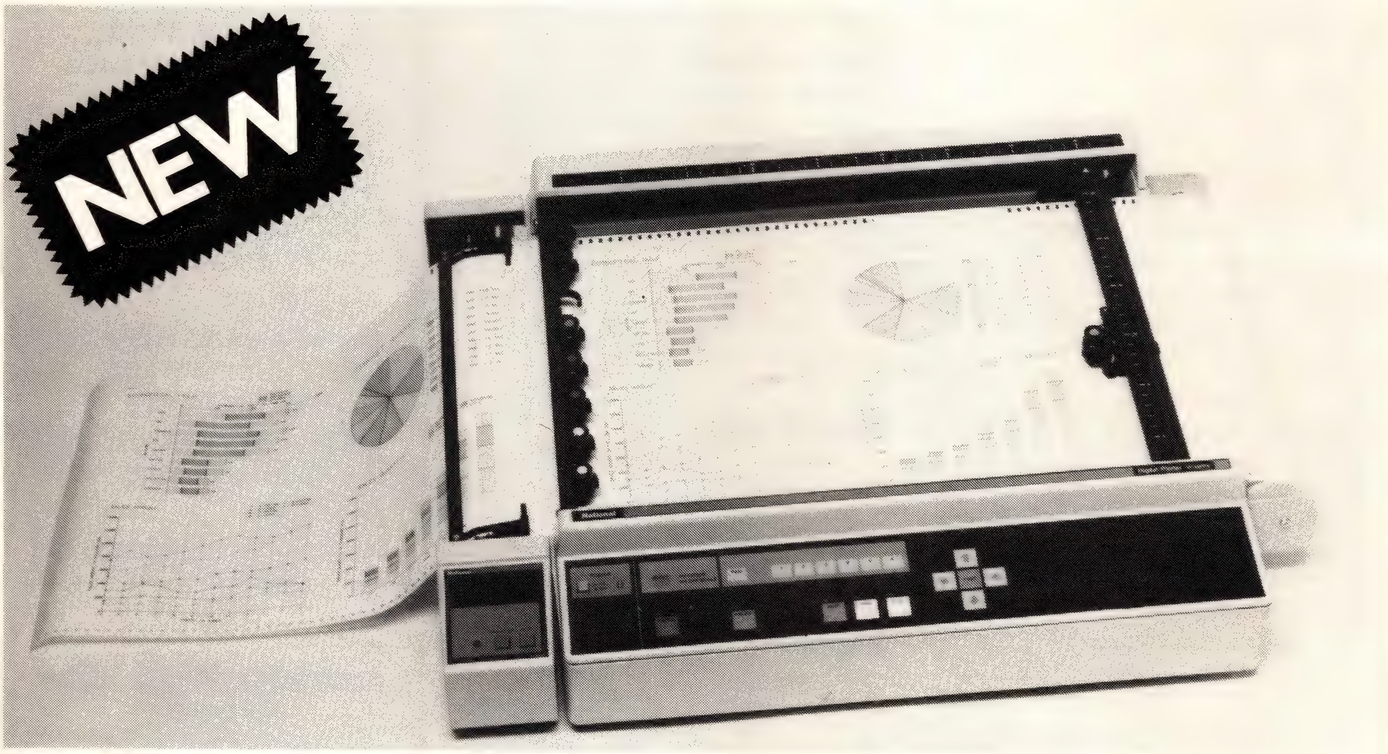
(02) 439 5133

Australia's largest range of Computer books. Over 1,000 titles in stock. We are opposite the MLC Tower inside the Pocket and Technical Bookshop.

137a KING STREET, SYDNEY
233.1944

Enter M066 on Enquiry Card

8 PEN MULTI COLOR PLOTTER
at an affordable price



National

A-3 Type Digital Plotter
VP 6802A

1. MULTICOLOR HIGH SPEED PLOTTING

EIGHT COLOR GRAPHICS AT 450mm/sec (18 inch/sec)

The high plotting speed of 450mm/sec (18 inch/sec), the variety of pens (fiber, ball point, plastic tip) and colors allow great versatility in the creation of graphs.

2. SIMPLE PROGRAMMING

A VARIETY OF INTELLIGENT FUNCTIONS

The high level of intelligence built into this Digital Plotter greatly simplifies the programming required to generate the complicated engineering drawings or business charts.

3. RELIABLE PAPER SECURITY

ELECTROSTATIC PAPER HOLDING

The highly reliable, electrostatic paper-holding method guarantees secure paper holding, which is applied by simple switch operation.

4. QUIET MOVEMENT AND SAFETY

DESIGN CONSIDERATION ON MECHANICAL CONSTRUCTION AND SOFTWARE PLUS PROTECTIVE COVER

The detachable plastic cover assures durability and safety while suppressing the movement noise substantially.

5. CONTINUOUS PLOTTING

AUTOMATIC CHART ADVANCE "OPTION"

By combining the automatic chart advance option, this plotter can function in a tollaly unattended mode. This makes it possible to build up fully automatic drawing system which does not need any human care.

6. COMPUTER INTERFACES

THREE TYPES

Eight bit parallel, RS-232-C and GP-IB interfaces are able with VP-6802A. The above interfaces allow the plotter to be used as a computer graphics device as well as an instrumentation graphics device.

SCIENTIFIC DEVICES AUSTRALIA PTY LTD

2 JACKS ROAD, SOUTH OAKLEIGH,
VICTORIA, 3167 PHONE: 579 3622
31 HALSEY ROAD, ELIZABETH EAST, S.A., 5112 PHONE: 2555 6575
35-37 HUME STREET, CROWS NEST, N.S.W., 2065 PHONE: 43 5015

Enter M057 on Enquiry Card

Industry shakeout looming

Osborne Computer Corp's failure is not simply the failure of a high-flying, overly egotistical company. It is symptomatic of the of the troubles of the entire industry. Thom Hogan says the next 12 months will be painful to watch.

THE signs should have been obvious: changes of spokespersons; reductions in the amount of advertising; high-level executives leaving for other companies, or worse yet, leaving just to leave; lack of advertising for new employees in Silicon Valley newspapers; heavy discounting (greater than 25 per cent) of the company's products by retailers; cut-backs in services or product line offered; long delays in delivering promised new products; and rescinding of planned public stock offerings.

I have come to realise that the problems of Osborne Computer are the problems of an industry, not a company. We've already witnessed the plummeting profits at Atari, Texas Instruments and Mattel severely damage those companies abilities to remain competitive.

Less than half a year is no small sum. By January, I'm sure you will be able to add Coleco to that list of loss takers. By April, Commodore will have joined them.

Beginning next year, several software companies will begin having similar problems (indeed, MicroPro, an old-timer in the software business, has apparently just recovered from a brief, unplanned, unprofitable spell).

As Apple and IBM reinforce their already wide lead in the microcomputer arena with the MacIntosh and the Peanut, respectively, other manufacturers will begin to feel the same pinch Osborne felt. Indeed, one company, Victor Technologies, has cut its workforce 43 per cent in the last six months, mostly because of an unprofitable second quarter.

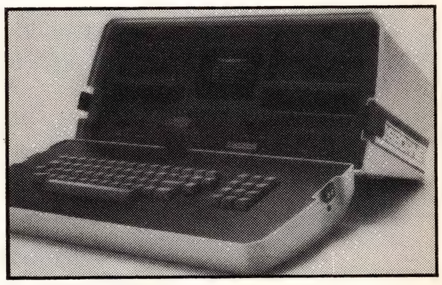
I predict the fallout in the marketplace will be so severe that it will not matter if the companies are profitable: they will simply run out of cash.

So why did Osborne fail, and why did other smaller manufacturers manage to get by? The problems in an infant industry are many: lack of internal controls, naive (untrained) management, inability to develop and introduce new products without hurting existing ones, the misguided notion that products and technology are more important than human factors, corporate egotism, pressure from venture capitalists and the belief that growth equals success are some.

While I was at Osborne, I felt the company had inadequate controls; yet, in my opinion, it was not much different from any other emerging microcomputer manufacturer in this respect. Atari and Texas Instruments, in fact, actually had far worse problems in this respect than did Osborne.

High-growth companies need *daily* reporting mechanisms, strict controls on inventory and corporate purchases and a solid feedback mechanism from customers. In a stable industry, you can get away with monthly reports and loose controls. But in a high-growth industry, one month can mean a 1000 per cent change, millions of dollars in cash or equipment and a 180-degree change in corporate direction.

Twice during Osborne's short history, the company misread signals that would have been immediately obvious if a solid reporting mechanism had been in place. In fact, almost six months after the end of



The two Osborne computers that reached the market.

its last fiscal year, a multimillion-dollar accounting discrepancy was caught by an audit, seriously restating the company's financial position.

Most company founders have not been high-level executives with corporate responsibility (or if they have, it hasn't been in the microcomputer industry). They lack traditional business training, few even have MBA degrees.

Furthermore, with few exceptions, the investors in microcomputer companies are willing to believe overstated results, and they do not insist on the types of reporting mechanisms that would call attention immediately to serious problems. Bringing in management from another industry, a popular pasttime in Silicon Valley these days, aggravates the problem.

Suddenly, you have executives who are used to stable industry-management practices, but who are incredibly naive with respect to technology and what made microcomputers so popular in the first place.

The most popular personal computers were designed by extremely small, totally entrepreneurial staffs, and the entrepreneurs *felt* what personal computers should be like and how they should be sold.

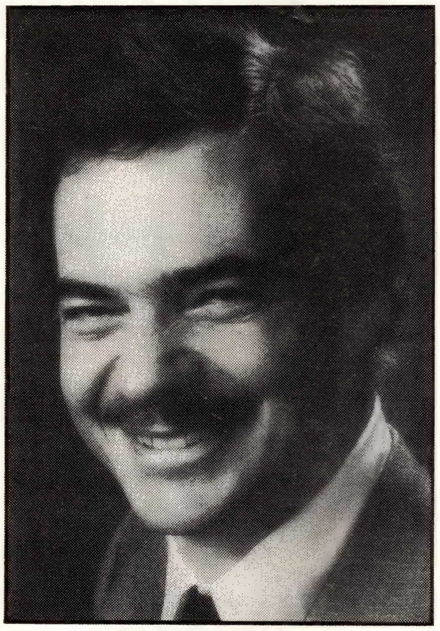
To give an example of doing the right things from the traditional business point of view, but wrong from the standpoint of surviving in the personal-computer industry, consider this: At Osborne, one of the first areas to be severely cut when financial problems hit was add-on software.

'The fallout in the marketplace will be so severe it will not matter if the companies are profitable'

Acquiring and publishing software involves mostly up-front costs (profits come later — you have to live on cash flow for a while). Osborne couldn't afford to continue publishing software, so the effort in that area was drastically reduced.

But Osborne was the principal supplier of software for its computers; how did it expect to continue to sell computers without new software? As it turned out, it didn't.

Introducing new products is an art at which few microcomputer companies have succeeded. Apple has done it better than most, and it's batting only .666 (two out of three). Preannouncing products is a part of the problem. Once everyone knows that you are coming out with something new, your marketplace goes away until you come out with it. The obvious answer is not to preannounce products.



Adam Osborne

Another less obvious solution to the problem would be to adapt the scheme that motor vehicle and other mature industries use: that of *scheduled,* yearly new-model introductions.

This requires that you be satisfied with seasonality of sales, and it also requires that you not make radical changes that completely outdate previous products, yet it has the advantage of being a known element — your products are most valuable following introduction, least valuable at the annual changeover.

Osborne was extremely unsuccessful at the introduction of the Executive I computer. One reason was that it was announced before full availability.

Two other reasons, however, made the introduction even worse than it could have been: first, the company forgot what made it successful in the first place (inexpensive, adequate computers); and in addition to announcing the Executive I, the company preannounced the Executive II! How bizarre!

Not only did the company kill sales of the Osborne 1 with the preannouncement of the Executive I, but it simultaneously killed the sales of the Executive I with the preannouncement of the Executive II. The only company that has done a worse job of announcing new microcomputer products is Digital Equipment Corp (DEC), which simultaneously announced three radically different personal-computer systems, all software-incompatible with one another, and none available on the date the company announced them.

One area that greatly concerns me is the problem that most companies have when they emphasise technical aspects as being more important than human factors. The IBM keyboard is beautiful when considered as a technical achievement, but an utter monstrosity when considered from the typist's viewpoint. Another example: most companies increased the amount of documentation they had when people complained about how bad it was; now users don't complain anymore, mainly because they never get around to reading it all (this has been a boon to shelving and binder manufacturers, however).

Yet, the aspect that bothers me most about putting technical aspects above human is how misguided this notion is. I've had an Apple II for more than five years. I still marvel at how advanced and flexible that machine is.

Considering that the design is mostly the result of one person's sweat and genius, it stands as a technological milestone. In fact, there is absolutely no reason that the Apple Lisa software project could not have been done using the Apple II as a base, the Apple II is certainly not an obsolete machine.

Indeed, add a Koalapad touch tablet, some software as ingenious in design as the computer, a hard-disk drive and add-on graphics board capable of Lisa-like resolution, and you have a Lisa. I'm willing to bet it would even run faster than the Lisa.

It's ironic that the Lisa is one of the most humane machines from a software standpoint, yet manages to get caught up in technology for technology's sake. Osborne, too, got caught up in the idea of packing more into the same space. Frankly, the best-selling machine Osborne could have come up with needed only a seven-inch monitor and a slightly lower price to succeed — both reachable goals if they had been pursued. Instead, the goal was to make it smaller or more advanced, preferably both.

Corporate egotism is an area where Osborne excelled. When Kaypro introduced its first portable computer, did Osborne develop strategies to keep it from eroding the Osborne marketplace? Not really.

When Lee Felsenstein, myself and others first proposed a product route to 16-bitdom, codenamed Shelly, it was rejected as being "more than adequate" and unnecessary. When Roger Chapman and I later proposed to develop a 16-bit add-on processor for the forthcoming Executive, Adam Osborne did a perfectly good job of convincing us that he was not interested, and felt that we were incapable of it anyway.

(I notice that one of the employees Adam has retained to work on the 16-bit Executive II is Roger.) Such corporate egotism is often valuable in the short term to convince employees that the 80-hour work weeks are worth it, but it is a nonsensical long-term business trait.

Ironically, the next area of discussion, pressure from venture capitalists, has helped a few microcomputer companies to survive. The reason? They were pushed hard to go public soon, while the stock market was hot.

Public stock offerings brought with them the one thing that is necessary to survive the next few years: lots of cash. Yet, that same pressure has altered the thinking of microcomputer executives.

In fact, the pressure from venture capitalists generally results in the corporate egotism I just described.

Instead of worrying about the corporate competitive position, instead of developing long-term product strategies that make sense, instead of building larger successes on smaller ones, the executives keep looking for "the kill". Of all the companies making microcomputers, only Apple has shown that it has the vision and determination to build a company on a long-term plan. To give just one example: At one time Osborne had eight different research and development projects under consideration. I had a problem with all eight, because no matter how I tried, I couldn't fit them together.

All Osborne was going to do was replace one machine with another. This isn't to say that none of them were worthwhile projects; but they all resulted in radical flip-flops in corporate direction.

On the other hand, Apple has, with the possible exception of the Apple III, carefully carried out the evolution of current products while designing other products that can supplement, not replace, its current business.

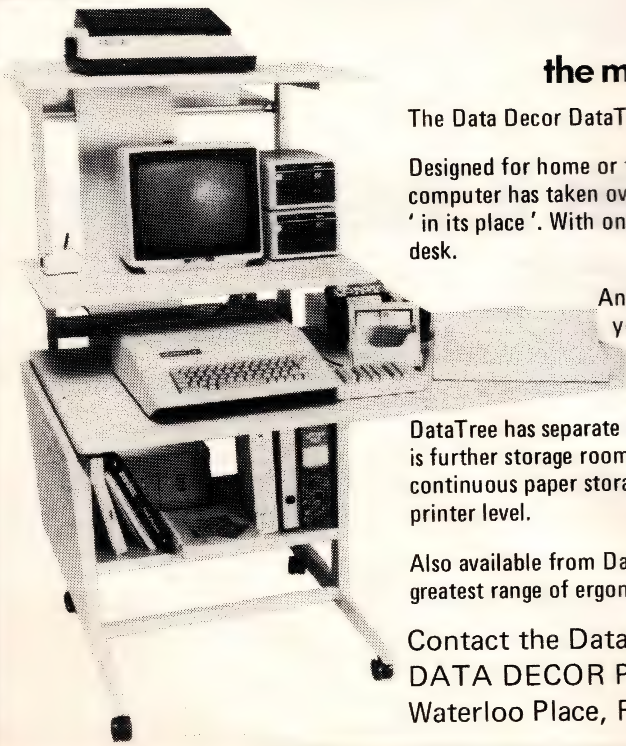
Probably the biggest factor of all — the factor that dooms most of the microcomputer companies now in existence — is the last item on my list of industry problems: the belief that growth equals success. Growth does not simply occur in sales results.

At Osborne and other companies, one method of coping with problems is to throw people on them. If two people cannot finish a needed accessory in a month, maybe 10 people can.

There's a book that everyone in the microcomputer industry should read: *The Mythical Man-Month,* by Frederick Brooks. Although the book ostensibly describes the software efforts on the IBM 360 project, it really has more applicability than in computer design.

Behind Brooks' software-development therories lies a truism: KEEP IT SIMPLE, STUPID: or, as I would phrase it: KEEP IT SMALL, STUPID.

The microcomputer industry is, after all, about the American Dream: to start the next IBM, the next Apple, to make millions of dollars. What everyone seems to forget is that to make $US1 million, you must first make $US1 and keep it. To create a large, successful company, you must first make a small, successful company. ☐



DATA DÉCOR

DATATREE

the mobile space saving, PC workstation

The Data Decor DataTree is the ultimate microcomputer workstation.

Designed for home or the office, DataTree is both a desk and a workstation. If your computer has taken over your desk top, DataTree makes it simple to put your computer ' in its place '. With one flap down, DataTree is just like a typewriter 'return' on a secretary's desk.

And DataTree can roll through doorways, so there is no need to dismantle your system when you want to move it, simply fold down the side flaps, unplug the 240V lead, and move your DataTree workstation and system to any room you wish.

DataTree has separate levels for the computer and drives, visual monitor and printer, and there is further storage room for diskettes, manuals and printouts under the main work surface. For continuous paper storage, there is a separate detachable rear paper catch tray behind the printer level.

Also available from Data Decor are other personal computer workstations, and Australia's greatest range of ergonomic computer furniture.

Contact the Data Decor distributor in your State or -
DATA DECOR PTY. LTD.
Waterloo Place, Richmond, Victoria, 3121. Phone: (03) 429 9488

Enter M023 on Enquiry Card

Here's what makes this TeleVideo Personal Computer so attractive:

More memory. 64K Bytes of memory are included as a standard feature. (Additional memory is also available).

Easier on the eyes. The non-glare screen and sharp resolution make it easier to read charts, graphs, characters and numbers.

More workspace. Video screen is 20% larger than the standard screen, so you don't have to strain to see your work.

Graphics. A wide variety of advanced business graphics can be displayed on TeleVideo's special screen.

Easier to read. Tilting screen adjusts up and down to natural line of sight.

More reliability. Vertical cooling tower keeps the computer cooler so it'll perform better and last longer.

More applications. Because the TeleVideo personal computer uses CP/M® software, no other computer has more software applications than TeleVideo.

More storage. The standard two 370 Kbyte floppy drives are enough to accommodate growth in the future.

Easier number manipulation. Standard calculator keyboard is more familiar, so you can work faster and make fewer errors.

The TeleVideo SuperMouse.™ By moving the SuperMouse on the pad, you can control computer functions without the use of complicated keyboard codes (optional).

Easier to Use. Detachable keyboard moves anywhere on your desk, or even onto your lap.

Less exhausting. Unique palmrest lets you rest your hands while you're working.

Compact. TeleVideo takes up very little space on the desk.

Here's what makes it irresistible:

$3995.00 (ex. tax)

The TeleVideo TS 803 personal computer has everything other leading personal computers have, and then some.

In fact, some of TeleVideo's easy-to-use features can't be found on any computer, no matter how high its price.

Which makes our low $3995 price doubly attractive.

So why resist?

Before you buy any personal computer, look into the family of TeleVideo personal computers and personal computer networks.

data peripherals pty ltd

9 AVON ROAD, NORTH RYDE, N.S.W. 2113, AUSTRALIA
PHONE: (02) 888 5733 VIC. (03) 598 5111 QLD. (07) 287 1200
NZ (09) 49 1303
Incorporated in N.S.W.

SuperMouse is a registered trademark of TeleVideo Systems, Inc. CP/M is a registered trademark of Digital Research, Inc.

Enter M004 on Enquiry Card

Olivetti's Italian style!

The Olivetti M20 uses the Zilog 16-bit Z8001 microprocessor. Its PCOS operating system offers password protection for files and disks through the use of transient commands. An optional 8086 coprocessor is available for the Olivetti machine.

Paul Freiberger reports:

IT SHOULD have come as no surprise Olivetti, the giant Italian office-machine company, decided to enter the personal-computer market last year. In recent years, Olivetti has expanded its product line from typewriters to minicomputers, printers and word processors.

The success of the M20 may not necessarily be determined by the quality of the system, which is good, but rather by the company's selection of the Z8001 microprocessor that makes it incompatible with software designed for the two more popular 16-bit processors — the Motorola 68000 and the Intel 8086/8088 line. Olivetti has gone to considerable lengths to make its machine credible, however, and the M20 already has proven a success in Europe.

Features

The M20 is built around the Z8001 microprocessor, a 16-bit processor with a 16-bit bus. As the two giants of the personal-computer industry — IBM and Apple — have selected the 8088 and the 68000 processors respectively for their 16-bit machines, Olivetti might get lonely when it is seeking out third-party software developers. Olivetti has covered its options by introducing an optional 8086 co-processor.

Olivetti also offers an optional 8-bit CP/M emulation program. The M20 is composed of a central unit that includes the CPU, the disk drives and an attached keyboard.

The case is made of moulded plastic and has the stylish Italian design that is a feature of all Olivetti products. The monitor is housed in a unique casing that has a plastic bearing on top of a short pillar that enables the monitor screen to be tilted and rotated to the desired viewing angle.

The monitor assembly is not attached to the rest of the system and can be moved from the top of the system unit.

The keyboard includes a numeric keypad, but it does not have function keys.

At the upper left of the keyboard is a Reset key. When depressed with the Control key, it clears memory and reloads the operating system. A more thorough system reset is possible if you turn the power off and on again or if you depress the recessed switch plate on the back right side of the central unit.

The M20 comes standard with 128K RAM, expandable to 512K with the addition of three memory boards. In addition to 128K boards, expansion in 32K increments is also possible.

The system is available with one or two 5¼in mini-floppy, double-sided, double-density disk drives. Each drive has a capacity of 320K (286K formatted). Optional drives of either 160K or 640K are also available, as is an 11M-byte hard-disk drive (9.2M-byte formatted). The hard disk fits in place of one of the mini-floppies.

Interfaces built into the CPU in a standard system are an 8-bit (Centronics-like) port to which you can connect one peripheral and an RS-232C serial port. The CPU contains two I/O slots.

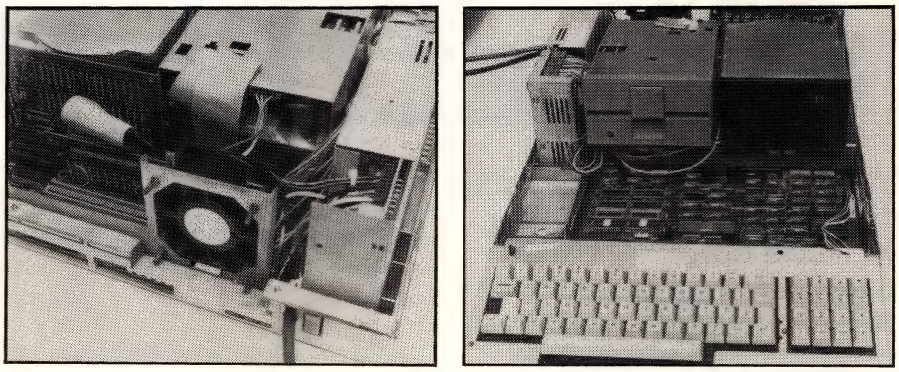
These can house a dual RS-232C board and an IEEE-488 high-speed parallel interface that can connect up to 14 peripherals. Both these are optional.

The monitor offers bit-mapped graphics with a resolution of 512 x 256 pixels. A standard M20 comes with a monochrome display, although a color monitor to support color graphics is available. Eight colors are available in color mode.

System software — the operating system and Basic — for the M20 look surprisingly like the industry standard CP/M operating system and Microsoft Basic language.

PCOS offers optional display formats of 16 lines of 64 characters or 25 lines of 80 characters. Surprisingly, the system initially comes up in a 16 x 64 format, through it is a simple matter to select the other option. Formatting of disks is a simple process, and a builtin prompt warns the user: "format deletes all files. Format disks? (y/n)."

In addition to the traditional functions of the PCOS nucleus — controlling the



The M20 is a compact system with expansion slots at the rear.

computer's memory, handling a real-time clock, passing messages to the CPU and translating command language into machine language —PCOS also allows you to access transient commands such as password protection of disks.

PCOS supports multiple windowing. A window is a rectangular area of the screen with its own co-ordinate system. When you enter Basic, the screen displays a single window that you can split horizontally or vertically to give a maximum of 16 windows.

Graphics statements in the Basic interpreter simplify exploiting the system's graphics abilities.

Olivetti has produced several applications packages for the M20. Oliword is a useful but cumbersome wordprocessor that is closely tied to the features of the M20 keyboard. Users may feel uncomfortable with Olivetti's idiosyncratic keyboard.

Performance

The M20 has run reliably and shown no signs of wear after several months of daily use. The disk drives are among the quietest I have worked with on a microcomputer.

With the 8086 board installed, when the machine is turned on, the first prompt you see is "Select Alternate CPU (y/n)?" When you answer the prompt, the processor you select automatically goes to work and the computer performs as an 8086 machine.

The 8-bit emulation program does not work with the 8086 board installed, though. Olivetti has MS-DOS and CP/M-86 versions of Wordstar tailored for both operating systems. The co-processor board worked well, although the version of Wordstar we used ran no faster than the program does on Z80 machines.

IBM Personal Computer programs did not run on the M20 in their original forms due to the incompatibility of the terminal driver levels of the machines. Running the operating system is not sufficient. To take advantage of its new co-processor board, Olivetti must commit itself to seeing that MS-DOS and CP/M-86 programs are adapted for the M20.

Ease of use

Basically, the machine is easy to use. Cryptic error messages in the operating system were annoying.

Olivetti refers to its right-hand drive as drive 0 and its left-hand drive as drive 1, an unusual design approach for most of us. The machine can read programs from either drive.

The keyboard on the M20 is a trouble spot. Like IBM, Olivetti is an experienced manufacturer of quality typewriters. It is remarkable that both companies' entries into the personal-computer market should have imperfect keyboards. First, the M20 has no Shift Lock key. To obtain a shift lock, you have to depress a special COMMAND key and the Question Mark key simultaneously. You turn the shift lock off in the same manner.

Nor is there a properly identified Backspace key. A key labeled S1 serves for backspacing.

australian
Micro
computer magazine
Hardware Report Card

Olivetti M20	**Poor**	**Fair**	**Good**	**Excellent**
Setup	☐	☐	☐	☑
Ease of Use	☐	☐	☑	☐
Performance	☐	☐	☑	☐
Documentation	☐	☑	☐	☐
Serviceability	☐	☐	☑	☐

Features of System:
- Z8001 processor
  8086 addin processor
- 128K RAM
- dual 320K disk drives
- 512 x 256 graphics
- PCOS operating system

Price: $A4990

Distributor:
Olivetti Australia
140 William Street,
Darlinghurst 2010.
(02) 358 2655

Finally, reminiscent of IBM's faulty input mechanism, on its keyboard Olivetti has placed an extra key to the right of the left Shift key and an extra one to the left of the Return key.

Documentation

Olivetti's documentation comes in large loose-leaf style binders. Most manuals are clearly written and well printed. There is still room for improvement.

The incorporation of volume passwords (passwords to protect entire disks) is a nice Olivetti feature that works well. Within the documentation, however, I found no warning against password-protecting the PCOS disk. If you password-protect the operating system, you will be unable to remove the password because you need to use the transient commands in the operating system.

If you haven't backed up your disk, you are out of luck. In the explanation of password-protection, I came across a discrepancy between the syntax command required and the syntax example diagrammed above it.

If someone had performed a little extra proofreading, he would have turned up the mistake that instructs users to obtain a logical reset by depressing the RESET key with the SHIFT key. That combination of keys causes nothing to happen.

Serviceability

Olivetti offers a 90-day warranty for the M20, then offers users the choice of full maintenance or depot maintenance. Olivetti's extensive network of service depots provides service for a wide range of Olivetti products in all capital cities and a number of country locations.

This service network is available to M20 users.

(Continued on page 40)

Colour Communicates Better.
... and it costs no more than Mono.

The logical switch to colour has never cost less.

Now you can buy an Intercolour 2405D single evaluation unit for only $1495 plus tax.

This is a once only evaluation offer and as such one only can be purchased per customer.

Evaluation prices are good through to the 31st January, 1984.

- VT100* features plus colour, plus graphics.
- ANSI 3.64 compatible.
- Detached keyboard.
- DEC* thin line graphics set plus terminal based vector graphics.
- 8 colours.
- RS 232 interface.
- Numeric key pad standard.
- Up to 24 function keys (optional).
- Ex-stock.

The 2405D is ideal as a VT100* replacement with the added benefit of colour and dot addressable graphics.

Colour communicates better and intercolour produce affordable colour graphics terminals with more features.

*Registered trade mark of Digital Equipment Corporation.

ANDERSON DIGITAL EQUIPMENT PTY. LTD.

P.O. BOX 422, CLAYTON, VICTORIA 3168, AUSTRALIA. PHONE: (03) 544 3444. P.O. BOX 341, PENNANT HILLS, NSW 2120, AUSTRALIA. PHONE: (02) 848 8533. Adelaide: 46 4062. Perth: 387 6055. Hobart: 34 4522. Canberra: 58 1811. Brisbane: 352 5788. Newcastle: (049) 69 6467. Wellington: 69 3008. Auckland: 59 0249. Christchurch: 483 991. Darwin: 81 5002. Singapore: (65) 449 4433. Bendigo: (054) 42 4322. Wangaratta: (057) 21 6443.

Enter M058 on Enquiry Card

Olivetti's Italian style

(Continued from page 38)

Setup

Setting up the M20 is as easy as plugging in a few cables.

Summary

The Olivetti M20 is a reliable microcomputer with an operating system that boasts many impressive features. The machine is faster than most 8086/8088 computers when it uses the Z8001 processor, but slower when it uses the optional 8086 processor.

Olivetti already has made a number of application programs available under PCOS, including word processing, accounting and database management.

By selecting the Z8001 microprocessor, Olivetti has greatly increased its own responsibility for developing application programs that will make the machine useful and keep it that way.☐

Australian difficulty

OLIVETTI Australia has had a difficult time with the M20 in Australia. The system had its first major public appearance at the Personal Computer Show last March.

With its Z8001 processor and proprietary PCOS operating system it is higher priced and isolated from its 8088/8086 based competition. Olivetti has tried several strategies to promote the machine, dropping the price, bundling software and bundling an 8086 processor card to give the M20 compatibility with MS-DOS and CP/M-86 software.

None have been very successful.

A network of 30 dealers sells the machine, concentrating on vertical market applications. Olivetti has had some success selling the machine to banking and finance clients.

The M20 has a new product manager, Karl Pace from Osborne, who is repackaging the M20 as the "Total Solution". Pace is offering the WASP package, including an M20, and printer, with Oliword, Multiplan, Generex and the IMS accounting software for less than $A7000. The 8086 processor has been unbundled and is now an option.

Olivetti will release a local area network for the M20 in 1985 as well as two multi-user models, the M30 and M40.

SOLVE ALL YOUR COMPUTER NEEDS NOW AT THE SOFTWARE CENTER

We offer the widest possible range of word-processing, financial models, data management and accounting programmes, educational games, utilities, plus the option of renting Business software for evaluation purposes.
See our selection of books, magazines, mailing labels, computer papers, printed forms, diskettes, disk drive cleaner kits etc.

SOFTWARE CENTER
Shop 8, Cremorne Arcade
576 Hay Street, Perth 6000. Tel: 325 8471

SEND FOR YOUR FREE CATALOGUE

SOFTWARE CENTER
Shop 8, Cremorne Arcade, 576 Hay Street, Perth 6000. Tel: 325 8471

Please send me more information on:
☐ Word-processing ☐ financial models ☐ data management ☐ accounting programmes ☐ educational games ☐ utilities, ☐ the option of renting Business software for evaluating purposes.

MAKE OF COMPUTER ....
NAME ....
ADDRESS ....
TEL. ....

SC/MC-1

Enter M042 on Enquiry Card

If you'd like to spend a bit less time at the office, take it home with you.

You've seen for yourself how much time and effort a computer can save you at the office, so think of how much more it could do if you could take it home. Or how useful it would be to take along on business trips.

At ComputerLand we've got the answer. It's the Hyperion portable computer, which weighs only 10 kg and fits into a convenient carrying case.

With its 256K memory, the Hyperion is the world's most powerful portable computer, despite its small size. And it's fully compatible with IBM personal computers and IBM software.

So you can literally take your business home with you in a small case.

Wherever you live, or wherever you're travelling, you're about 30 seconds away from your office, because that's how long it takes to set up the computer and get down to business.

Hyperion has a number of other advantages, like a large 18 cm screen and interchangeable disk systems, which we can explain to you best at your local ComputerLand store.

At ComputerLand we know computers inside out and we'll speak to you in terms you understand. We'll also help you choose the right software for your business, from the widest selection in Australia, and arrange back-up service from our own technicians.

ComputerLand®
Make friends with the future. Today.

For further information about the Hyperion portable computer, and other ways in which ComputerLand can help your business, please fill out this coupon and send it to: FREEPOST 4, ComputerLand Australia Limited, 1-3 Rodborough Road, Frenchs Forest, N.S.W. 2086. Or phone us direct on (02) 451 8899.

Name____________________________

Company____________________________

Address____________________________

____________Postcode__________Telephone____________

JWT575.P.026

N.S.W. SYDNEY City Centre: Ph. 290 2955. BONDI JUNCTION: Ph. 389 4466. BURWOOD: Ph. 745 4311. CHATSWOOD: Ph. 411 7611. GOSFORD: Ph. 24 1811. NORTH SYDNEY: Ph. 929 4499. PARRAMATTA: Ph. 683 3199. RYDE: Ph. 808 2666. **A.C.T.** BELCONNEN: Ph. 51 3188. PHILLIP: Ph. 82 2911. **VIC.** MELBOURNE City Centre: Ph. 662 2133. BOX HILL: Ph. 890 0468. CAMBERWELL: Ph. 813 1300. SOUTH MELBOURNE: Ph. 266 8647. **QLD** BRISBANE City Centre: Ph. 221 9777. MAROOCHYDORE: Ph. 43 1677. SOUTHPORT: Ph. 32 8300. **S.A.** ADELAIDE: Ph. 212 7191. **W.A.** PERTH (opening soon).

Enter M021 on Enquiry Card

JUST VOTED PERSONAL COMPUTER OF THE YEAR.

The Advanced Personal Computer.

The Personal Computer of the Year was chosen by a distinguished panel of judges selected by Your Computer Magazine. NEC will be happy to provide specific details of the judging criteria.

For more information about the remarkable NEC A.P.C. write to
NEC Information Systems Australia Pty. Ltd. (Inc. N.S.W.).
SYDNEY: 99 Nicholson Street,
St. Leonards 2065. Phone (02) 438 3544.

MELBOURNE: 11 Queens Road,
Melbourne 3004. Phone (03) 267 5599.
BRISBANE: 8 Campbell Street,
Bowen Hills 4006. Phone (07) 52 8544.
PERTH: 67 Adelaide Terrace,
Perth 6000. Phone (09) 325 6988.

NEC

NEC Corporation,
Tokyo, Japan

Garland, Farwagi & Shillington NEC1231

Enter M005 on Enquiry Card

Personal Computer Software

16-BIT SOFTWARE AVAILABLE FOR ADVANCED PERSONAL COMPUTER

SOFTWARE

Category A:

Software sold by NECISA as the sole distributor of these packages on NEC personal computers. Full support provided by NECISA.

Category B:

Third party software with which NECISA is familiar and has demonstrated and tested and for which first line support may be obtainable from NECISA, but no warranty is implied. Product is obtainable from author or under certain circumstances, via NECISA.

Category C:

Third party software which is claimed to run on NEC Personal Computer products but which NECISA has not, as yet, fully evaluated.

Operating Systems

CP/M-86 Version 1.1	(A)
MS-DOS Version 2	(A)
P-SYSTEM Version 4	(A)

Languages

R.M. COBOL	(A)
C/BASIC-86	(B)
C.B.-86	(B)
PASCAL MT+/86	(B)
CIS/COBOL 86	(C)
DRI C 86	(C)
PL/1-86	(B)
SSS FORTRAN 86	(C)
RASM 86	(B)
CONTROL-C BASIC	(C)
SUPER SOFT C 86	(C)
PASCAL/M 86	(C)
JANUS/ADA 86	(B)
Computer Innovations C 86	(B)
MS-BASIC	(B)
MS-BASIC COMPILER	(B)
MS-BUSINESS BASIC COMPILER	(B)
MS-PASCAL	(B)
MS-FORTRAN	(B)
MS-C	(B)

Telecommunications

I.E. Asynch-86	(A)
I.E. Bisync – 80/3780	(A)
I.E. Bisync – 80/3270	(A)
MODEM 86	(B)

Word Processing

Benchmark Word Processor	(A)
Benchmark Telecommunicator	(A)
Benchmark Mail List Manager	(A)
Wordstar-86	(B)
Mailmerge-86	(B)
Spellstar-86	(B)
Spellbinder-86	(B)

Data Management

dBASE II 86	(A)
Dataflex 86	(C)
Condor 86	(C)

Productivity Tools

Access Manager 86	(B)
Display Manager 86	(C)
Diagnostics/2 86	(B)
Disk Doctor 86	(C)
RASM 86	(B)
Sid 86	(B)
VEDIT 86	(B)
Word Master – 86	(B)

Financial Modelling

Micromodeller	(C)
Microplan Spreadsheet	(A)
Microplan Business Planner	(A)
Microplan Consolidator	(A)
Scratchpad 86	(B)
Supercalc 86	(B)
Mars	(B)
MS-Multiplan	(B)
MS-Multi-Tool Budget	(B)
MS-Multi-Tool Financial Statement	(B)
Masterplanner	(C)

Accounting

IMS (Ascent) & (Executive)	(B)
Davidson	(B)
I.A.L.	(B)
Attache	(B)

PHONE TOLL FREE 008 22 6344 (IN SYDNEY PHONE 438 2322) FOR MORE INFORMATION ABOUT THE REMARKABLE NEC A.P.C. AND YOUR NEAREST DEALER

NEC

NEC Corporation
Tokyo, Japan

NEC 1135a

Enter M056 on Enquiry Card

Meaningful maintenance

Aftersales service and support should be foremost in the minds of all buyers. Before over-zealous salesmen dazzle you with science, read Norman Kemp's roundup on . . .

ALTHOUGH most popular business computers have achieved good reputations for reliability, breakdowns eventually do occur, and some machines even have roguish tendencies to go down with faults that are difficult to diagnose and fix. For large-scale business users, the problem is usually pushed aside into a general maintenance agreement which ensures that a computer or component is replaced quickly by the supplier.

But the price of such agreements is generally beyond enthusiasts or small professional buyers. Aftersales service and support are not always offered to the purchase of a computer, particularly those in the lowest price brackets intended primarily for home entertainment use. But when the price rises above $A1500, the customer is entitled to expect continuing dealer or manufacturer assistance.

One of the first rules in buying a computer should be to ensure that a well-equipped service and maintenance support department or outside facility is available. Unfortunately, this point often gets overlooked completely, in the excitement of owning a first micro.

And the dealer, whose object is to make a sale in the first place, has no obligation to remind the customer of it. *Caveat emptor* (let the buyer beware) as the rule goes. That cut-price computer might not be such a bargain after all if the shop that sold it has no facilities for repairing it or providing replacement parts.

Problems of a slightly different nature have arisen even among reputable suppliers that sell well-known and immaculately manufactured computers, but do not employ inhouse staff for subsequent servicing. Usually a third-party arrangement is offered to the customer.

This means that for an agreed annual price, the customer can bring the computer — or have it collected — to a service workshop which specialises in that brand. It is a system in general use that copes with a need, but which many buyers believe is not as satisfactory as a company or supplier which provides its own facilities.

For most service companies, the basic minimum rate is about 10 to 12 per cent of the original purchase price of the hardware, which, if the processor, monitor and a letter quality printer are included in a package, can be a quite expensive insurance for a small business user. Service companies argue that the price is cheap, as it offers fast service and a breakdown may occur at a vital time for a customer — such as during the monthly despatch of invoices and statements.

A new arrival to the ranks of third-party contractors is Control Data, of Victoria, which is finalising arrangements to service the Apple range, and also Cromemco, for Informative Systems, of Melbourne. Marketing manager John O'Neill said the service would assist buyers by providing the experience of a major mainframe company in customer engineering in co-operation with equipment suppliers.

Control Data expects eventually to handle a number of different brands, but there will be one common, significant factor. To ensure Control Data's engineers and software specialists are thoroughly familiar with the equipment, suppliers will have to provide a raft of technical detail, much of it confidentially so Control Data will have extensive indepth know-how.

The service facilities will be available through all capital cities. Fast rising to become the best-known micro on the

SCARLAN COMPUTER SERVICES

Scarlan Pty Ltd is offering 24hr. turnaround on APPLE II, APPLE IIe, disk drives and all APPLE supported peripherals. Other computers also supported are APPLE III, OSBORNE, ATARI, TANDY and soon IBM PC's. We also repair printers.

1. A combined total of 20 years experience in the microcomputer field, specialising in APPLE interfacing, communication, servicing and software support.
2. Experience in a wide range of microcomputers and peripherals.
3. Service contracts are also available at 13% and 8% total hardware cost for on site and in store respectively.

SPECIAL FOR THIS MONTH APPLE DISK-DRIVE ALIGNMENT $20.00

DEALER INQUIRIES WELCOME.

SCARLAN PTY LTD
(Inc. in N.S.W.)
1st Floor,
93 Longueville Road,
LANE COVE 2066.

FOR FURTHER INFORMATION CONTACT:
Armen or Felix
(9.00am to 5.30pm)
(02) 427 0314.

Enter M040 on Enquiry Card

market is the IBM PC, which, to the surprise of some early buyers, did not come with an assured service arrangement. Since its launch last February, dealers and customers have complained about slow delivery of parts from IBM, and some users discovered that their suppliers did not have adequate facilities to restore their machines after a breakdown.

IBM Australia has considered this situation seriously, and is about to announce a new deal in personal computer centres for the PC and XT models which takes advantage of the company's existing inhouse customer engineering locations for larger users. Although the full scale of maintenance charges has yet to be released, a maintenance agreement for a Personal Computer comprising processor, screen, keyboard and small printer, will be around $A500 a year, with the XT costing about $A200 more.

If desired, an agreement can be taken out for the individual components — and IBM also cautions that non-IBM parts or devices will not be covered in any way. In fact, these must be disconnected and removed before a machine will be accepted for service.

Under the new carry-in scheme, users will first attempt to locate a fault using the built-in diagnostics. These determine which part or device is faulty, and the unit is then taken to the IBM service centre where it will be repaired free of further charge.

The repair usually will take the form of a replacement — thus, for a defective monitor, a new screen will be substituted. Although the carry-in scheme has been designed for the single unit buyer and user, it also will apply to large-volume orders provided that all-IBM equipment is supplied throughout.

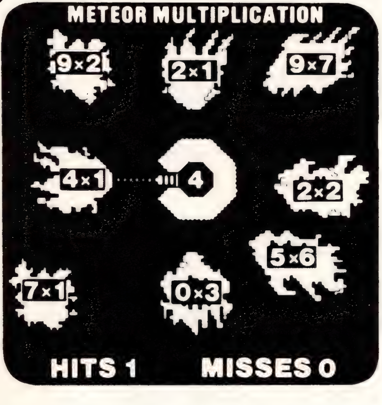
IBM Australia is appointing new dealers and now has 47 throughout the country — a rise of seven since the IBM PC was launched this year. A surprise package at the computer products sale in Sydney's two Grace Bros stores — one in the city and the other at Parramatta — was the demand for Osborne computers.

Although Osborne Computer has stated its intention to cease marketing in Australia, it has made continuing arrangements for Australia-wide servicing. This factor has been one of the influences on buyers, the other being the reduced prices of $A1795 for the Osborne 1 and $A2395 for the newly-released Executive, which was being cleared at almost cost, according to manager Rod Becker.

Although there were some first time buyers for the Osbornes, a number of customers were making repeat purchases, possibly with a view to having spares for existing equipment, or adding to an office application. But this sales did not spell the end of the Osbornes, Mr Becker said.

Because of demand, he has placed orders for more stocks, and these, with the Australian inventory now being run down, may have to be supplied from overseas distributors who still have products. But one line at least has been cleared and will not be renewed — the somewhat unfortunate Panasonic JB3000 which ironically was the first Japanese brand machine to go into the Grace Bros computer business centres.

The last machine was sold from stock early in the first week of the sale. Mr Becker said the object of the sale was to clear oversupply of a number of business items, dominated by software packages. Among these were Imagineering for Apple packages, Panasonic accounting software and Osborne hardware and software. ☐



DLM®

Maths & Word Games

- Alien Addition
- Minus Mission
- Meteor Multiplication
- Demolition Division
- Alligator Mix
- Dragon Mix

A Fantastic Learning Experience

Learning is easy when students are having fun. That's the idea behind DLM's Arcademic Skill Builders in Maths and Skill Builders in Language Arts.

Each of these twelve exciting and colourful educational software packages provides a highly motivational approach to learning. Unlike the other games on the market, these require that a child learn something useful while having fun. They also feature variable levels of difficulty, speed and running time. A child never outgrows DLM software!

DLM programs have been extensively field-tested. DLM's Language Arts games have all-Australian content. DLM is committed to quality. DLM programs have been highly praised time and time again in reviews in countless journals.

DLM Maths Skill builders available for the: • *Apple II/IIe* • *IBM PC* • *Commodore 64 (disk)* • *Atari (disk).*

DLM Language Arts Skill Builders available for the: • *Apple II/IIe.*

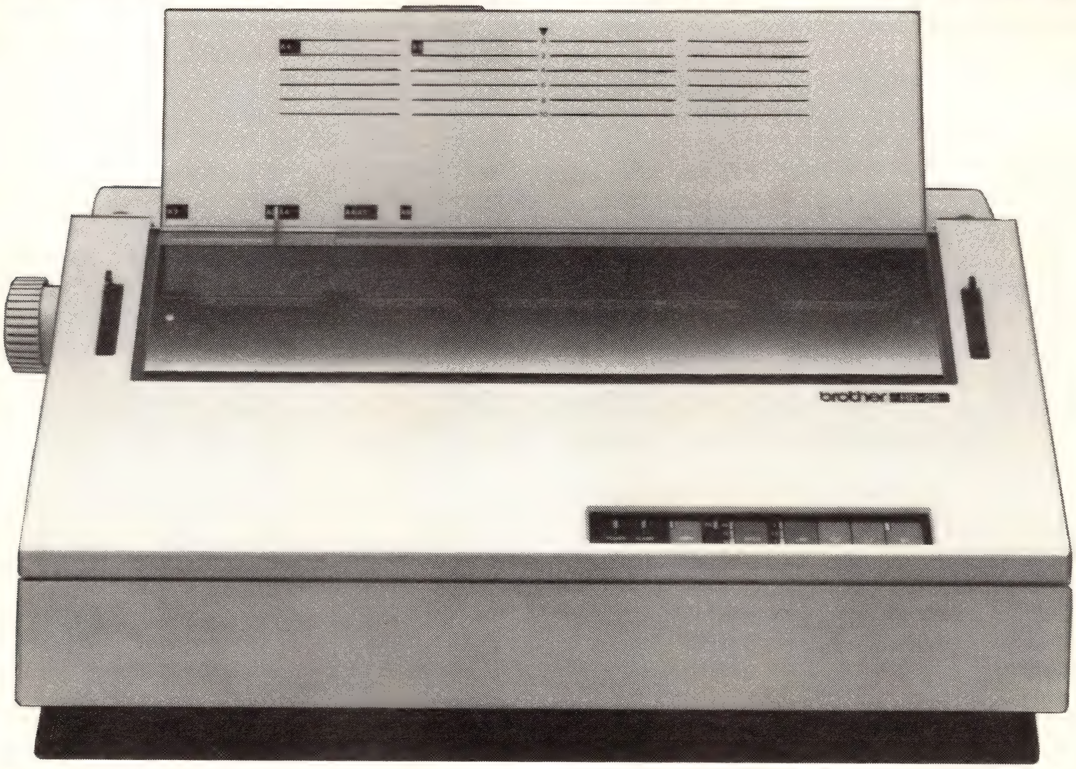
Available from your local software shop, or contact the Australian distributors, Dataflow Computer Services Pty Ltd, on (02) 745 3303, at 6-8 Elizabeth St, Burwood NSW 2134, for a free colour brochure and the address of a software supplier near you.

- Verb Viper
- Wordman
- Word Invasion
- Spelling Wiz
- Word Radar
- Word Master

Enter M062 on Enquiry Card

Now a high volume, daisy wheel printer for under $1400.

An integral part of today's word processing system.



The Brother HR-25

We know you won't match its price/performance anywhere and it will be a valuable asset to any modern, expanding office.

If your work load demands high volume with daisy wheel quality, the Brother HR-25 delivers the services of a professional printer at an amateur price.

The full width carriage handles everything including computer printouts and the tractor feeder and cut sheet feeder further expand the output of the HR-25.

The 5K buffer memory allows you to print a large amount of data, including identical copies, freeing your computer for other uses.

The bi-directional printout operates at a swift 23cps, so productivity is even further enhanced. $1345* (rec. retail. Price includes sales tax).

The Brother HR-15

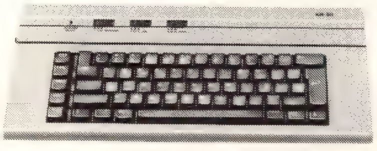
Designed specifically for the smaller office with lower volume and with a price tag to match.

The HR-15 is truly versatile with its interchangeable letter quality daisy wheel, optional electronic keyboard, and a 3K buffer memory which makes it unique in its class. $849* (rec. retail. Price includes sales tax).

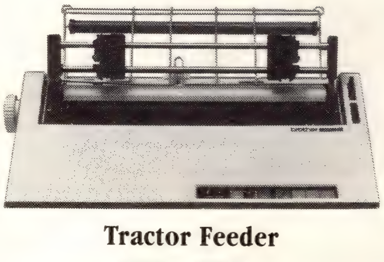
Ask your nearest Brother stockist to demonstrate all the skills of these quite exceptional machines.

*With Centronics interface. Also available in RS 232C at a slightly higher price. Prices may also be slightly higher in Western Australia.

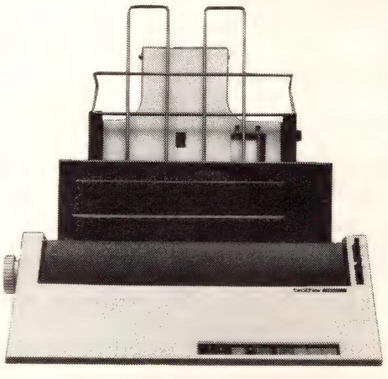
Brother's Optional Extras



Electronic keyboard



Tractor Feeder



Auto Cut-Sheet Feeder

brother®

The Affordable Electronic Printers.

Brother Industries (Aust) Pty. Ltd. 49 Herbert Street, Artarmon. NSW Phone: (02) 439 7344
Victoria: (03) 873 3655 Queensland: (07) 52 5257 South Australia: (08) 42 6373 West Australia: (09) 478 1955

CSO 4256

Enter M013 on Enquiry Card

Selling Japanese computers in Australia

Ian Webster talks to the companies that distribute Japanese microcomputers in Australia.

MOST Japanese microcomputers are manufactured by semiconductor companies and take their place among a vast array of consumer and electronic products produced for the home, personal and work markets. The rest are made by companies specialising in industrial electronics, or computer companies, known as electrical machine manufacturers in Japan.

The market for microcomputers in Japan is underdeveloped compared to Western markets, with an estimated installed base of fewer than 1 million machines of all types.

While the Japanese have been able to gain a presence in most international markets, their primary concern at present, is with the development of the internal market.

The concept of "OA", being promoted to encourage the introduction of computing into the work environment, and the integration of computers into home entertainment and information centres are two aspects of the Japanese strategy to develop the market. The agreement of most semiconductor companies to support Microsoft's MSX standard for home computers is an indication of their resolve to pursue the enormous volumes that the home market can deliver.

Japanese manufacturers have a high profile in Australia, with all leading manufacturers except Fujitsu trying to establish a presence. Unlike most US manufacturers, they are not particularly concerned with immediate marketshare, preferring to pursue a longer-term strategy that tries to avoid both fashion and price competition.

Superior quality control, automated production lines and the vertical integration of the Japanese electronics industry should ensure that this strategy is successful.

Japanese microcomputers are here to stay. □

Eight Japanese microcomputer distributors

COMPANIES distributing Japanese computers in Australia range from the subsidiaries of giant Japanese companies and traditional systems houses to small OEM operations specialising in a vertical market. These companies believe in the strength of the Japanese ability to produce high-quality, competitive products and expect their microcomputers to gain a large share of the global market.

They also are influenced by the Japanese approach to the market, based on using distributors' strengths to develop a strategic market position.

All insist that Japanese manufacturers are very interested in the Australian market, and are prepared to accept realistic local assessments of the potential for particular systems. In many cases, Australia is the most advanced of the international markets for some manufacturers, and their experience in Australia is used to develop their European and American operations.

As a group, these companies' attitudes and experience contrast with those distributing computers from North American manufacturers. As well as less concern with immediate market-share, the Japanese computer distributors tend to have strong links with the traditional data-processing and office products industries.

This experience makes these companies more conservative and more able to use their knowledge of the market to surve in a crowded market.

Canon Aust Pty Ltd

CANON Australia Pty Ltd is an example of how a major Japanese industrial corporation can operate an Australian subsidiary which fits comfortably and effectively into the local scene.

Canon's Australian success with computers has been based on locally developed software for the general accountant. That market has put Australia second only to Canada in Canon's overseas computer results, although it has entered the US market with its current AS-100 offering.

Canon Australia is not obliged to handle any specific products from Canon Inc, making its own decisions based on its view of the local market. The marketing and other customer contact functions are almost entirely in the hands of Australians with the small number of Japanese nationals brought here by Canon confining their activities almost entirely to administation and management.

When Canon recently moved its Australian head office to Sydney, it left national control of its most successful electronic business equipment division in Melbourne.

Canon expanded from the world of calculators into computers through an unusual intermediate machine, the AX-1, although internally, the company even refers to that machine's predecessor as a computer.

The Australian office did something quite extraordinary with the AX-1, considering it could be programmed only in the kind of language reserved for programmable calculators, and very loosely referred to as Assembler. It produced a system for chartered accountants which it could package with the AX-1 for considerably less than most contemporary early microcomputer suppliers.

To capitalise on that product, Canon established a direct sales force to reach accountants, as well as building on the strength of an extensive network of country town dealers already involved with other Canon products. In the computer area, Canon has continued to build on that target market into its third generation of computer architecture and thus the third reworking of its accounting software.

Before long, Canon unveiled its screen-based system, CX-1 which fell in to the end of the era of proprietary operation systems just when CP/M and Apple-DOS were starting to carve up the market. CX-1 gave Canon Australia its first opportunity to fully rework its accounting packages, and again its sales were largely restricted to that market.

Now the company has the AS-100, featuring IBM-PC compatibility plus 640K-byte capacity, dual disk drives and Japanese graphics format (640 pixels by 400 lines, 8 colors from a palette of 27).

It has picked up rights to MicroPro's applications software, under MS-DOS, added its own Canonbrain spreadsheet with graphics, which will grow to a fully integrated system in its second release.

Canon Australia also has added the third major revision of its accountant packages. Reinforcing Canon Australia's view that the AS-100 is also a product for a wider marketplace is its procurement of "exclusive except IBM" rights to HiSoft's Himed medical accounting package.

Canon Australia is able to ride on Canon Inc's reputation for quality and reliability, backed by competent hardware and software support as well as that dealer network throughout the country which it hopes will attract potential national account customers. As well as a dozen software support people spread around the States, Canon's hardware service facilities have grown in response to its increasing product range, while continuing improvement in product reliability has enabled that growth to be kept below the "always over budget" sales growth.

Going the full circle, Canon's computer area has brought out the X-07 handheld computer which will be marketed through the same channels as its calculator range. The X-07 tries to service both the business and home markets with a combination of features, peripherals and connectors.

It includes two innovations that futures are made of: plug-in credit-card size expansion ROMs and RAMs and an optical coupler, looking like a further miniaturised version of ET's head, for cordless communication. In true Japanese style, in 1976, Canon Inc launched a long-range strategy plan heavily dependent on advanced technology.

Beyond the novelties of X-07, that program is paying off with the range of peripherals and connections coming for AS-100, from its own high-performance inkjet color printer to integral Winchester disks as the forerunner to a multi-user configuration expected to run Oasis.

Mitsui Computer Systems

MITSUI Computer Systems is an Australian subsidiary company formed in 1980 to market Mitsui terminals and Diablo printers in Australia. It became involved with Sord microcomputers after the Melbourne-based Mitsui Trading Co ran into difficulties with two Melbourne retail shops who had been selling Sord in Australia.

Mitsui took the opportunity to become the Australian distributor for Sord. Sord is a relatively new Japanese computer company, whose success is similar to many US microcomputer companies that build business systems.

Sord developed the first successful Japanese microcomputer applications program, Pips, a spreadbase whose success in Japan has paralleled Visicalc's in the US. The success of Sord has been closely linked to Pips.

The present range of Sord computers, distributed by Mitsui, includes the M5 home computer, the M23/M23P Z80A-based CP/M-compatible systems and two larger systems, the M343 (based on the 8088 processor) and the M68 (based on the 68000 processor). The M5 is a typical Japanese home computer, based on the Z80A, and featuring good-quality color graphics with sprites, sound and cartridge software.

The M23 is the standard model of the range, offering 128K-bytes of RAM and SB-80, a CP/M-compatible operating system and color graphics. The M23P offers dual 3in disk drives and an LCD option.

The M343 is an 8088-based MS-DOS system offering 256K-bytes of RAM, a choice of 5in, 8in and hard-disk drives with high-resolution color graphics. The M68 is based on the 68000 processor with 256K-bytes of RAM supporting CP/M 68K and 16 color, high-resolution graphics.

Mitsui is using a network of 35 dealers with 20 operating in vertical markets. A direct sales force handles national accounts and is increasingly active in the corporate area.

Mitsui tried to translate the Japanese phenomena of the Pips Inn to Australia when it established a showroom in a George Street, Sydney, McNally office furniture showroom. This venture failed and Mitsui established the Mitsui Computer Shop in Hamilton Street, as a showroom and support centre for its national corporate accounts salesforce.

Mitsui has had limited success with Pips, mainly with financial institutions. Mitsui will release an 8088 cartridge for the M23 next year that will provide MS-DOS capability, S-Net, a RS232-based network and a range of enhancements for the M5.

Considerable support will be provided for the M68, one of the low-cost 68000 systems on the Australian market. Peter Jarman, Mitsui's managing director, says the microcomputer market is hard, volatile and demanding.

He is confident there is a place for the M5, but wants to wait for margins to stabilise before pushing aggressively into the market.

He is convinced that Japanese manufacturers will continue to improve their marketshare with high-quality, competitive products, and is supporting a strategy of controlled growth for Mitsui. The lack of success for Pips in Australia and the use of a CP/M lookalike operating system has hampered Mitsui's sales of the Sord range.

With the wide range of models available in the Sord family and the determination of Mitsui, it should be able to achieve its objectives of moderate growth.

National Panasonic

WHILE the Computer Company is the youngest and least experienced of these distributors, it has been involved with the largest Japanese electrical company, Matsushita — manufacturer of National Panasonic microcomputers since 1978. Entrepreneur Gary Blom distributed the Panasonic JD series, supporting business applications, for three years before SInger bought the company in June 1981, after corporate headquarters suggested that subsidiaries become involved in the computer business.

The Computer Company was changed into a consumer-oriented company. In June 1982, it became the first Australian company to climb onto the IBM-PC compatible bandwagon, with the release of the JB-3000. The company engineered a high-profile campaign, promoting the concept of IBM-PC compatibility as the only option for serious microcomputing, Japanese microcomputers and the department store computer business centre with a chain of business centres in Angus and Robertson bookstores. Blom also developed the cardboard Attache case concept, for the launch of the Attache accounting software, before leaving the company in March 1983.

The aftermath of his entrepreneurial extravagance, coupled with the release of the IBM-PC in Australia and the cost of supporting compatibility, forced a reorganisation of the company.

The JB-3000 is an 8088-based system with 96K RAM, 32K video RAM supporting 640 x 200 B/W and 320 x 200 color graphics, and a choice of 5in, 8in and 8M-byte drives with MS-DOS and CP/M-86. The system is distinguished as the only computer in its class that connects all devices by external cable.

The dealer network consists of 32 dealers, split 50/50 between value added and computer dealers. The computer dealers include the remaining three Angus and Robertson business centres, and Myers. The Computer Company has pursued the general microcomputer market, offering industry standard applications and accounting software, but has increasingly turned to specialised vertical market for sales.

John Barsing, TCC general manager, says the JB-3000 has not sold as well as it deserves, but he expects to double unit sales in 1984. Anyone selling over 100 units at present is in the top three, he says.

A local-area network will be released next year for the JB-3000 and continuing efforts to improve the compatibility of the system are reported to be producing results.

Panasonic has a range of home computers on the Japanese market and Barsing says he would love to be in the home market, but won't be tempted until the price wars end. He says the Computer Company returned to profitability in August 1983.

The Computer Company tried to establish a Japanese microcomputer, using US marketing concepts — now the company is following the Japanese path of strategic growth.

Astute and flexible management should enable the JB-3000 to survive in niche markets, with the future depending on new product from National Panasonic.

How to buy a computer by the numbers.

Introducing the Cromemco C-10 Personal Computer. Only $2648*, including software, and you get more professional features and performance for the price than with any other personal computer on the market. We've got the numbers to prove it.

The C-10 starts with a high-resolution 12" CRT that displays 25 lines with a full 80 characters on each line. Inside is a high-speed Z-80A microprocessor and 64K bytes of on-board memory.

Then there's a detached, easy-to-use keyboard and a 5¼" disk drive with an exceptionally large 390K capacity. That's the C-10, and you won't find another ready-to-use personal computer that offers you more.

But hardware can't work alone. That's why every C-10 includes software - word processing, financial spread sheet, investment planning and BASIC. Hard working, CP/M-based software that meets your everyday needs. Software that could cost over $1500 somewhere else. FREE with the C-10. There's really nothing else to buy.

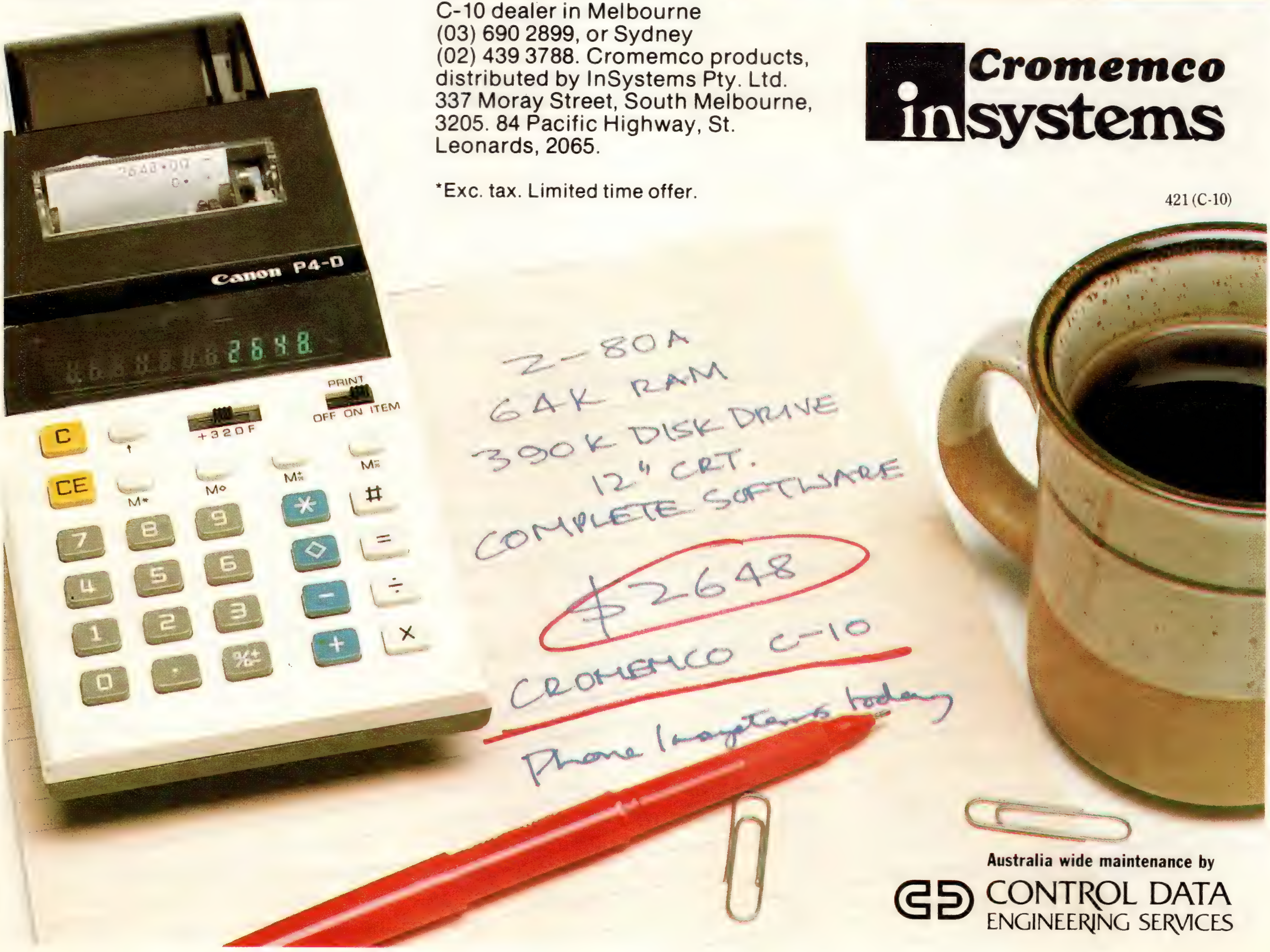
But the C-10's numbers tell only part of the story. What they don't say is that Cromemco is already known for some of the most reliable business and scientific computers in the industry. And now for the first time, this technology (including networking and communication) is available in a personal computer.

One last number. Call InSystems for the name of your nearest C-10 dealer in Melbourne (03) 690 2899, or Sydney (02) 439 3788. Cromemco products, distributed by InSystems Pty. Ltd. 337 Moray Street, South Melbourne, 3205. 84 Pacific Highway, St. Leonards, 2065.

*Exc. tax. Limited time offer.

Cromemco
insystems

421 (C-10)



Australia wide maintenance by
CONTROL DATA
ENGINEERING SERVICES

Enter M032 on Enquiry Card

NECISA

NEC is the fifth-largest electrical equipment manufacturer in Japan and dominates the Japanese microcomputer market. Its corporate strategy has been defined as "C&C" — the integration of computers and communications leading to a better quality of life.

NEC started its Australian operations in 1969 as a supplier of communications equipment to Telecom, and established a manufacturing plant at Mulgrave in Victoria that now employs 450 people. In 1981 it formed a subsidiary to market the Astra range of minicomputers and the Spinwriter family of daisywheel printers.

NEC Informations Systems Australia introduced their Advanced Personal Computer (APC) in August, 1982, and the 8201 briefcase portable a year later. Its PC-6000 home computer had been distributed by Hanimex, but this venture was unsuccessful and the agreement was terminated.

The APC is a combination of conservative design and advanced technical features, combining NEC's quality manufacture and chip design with an integrated system using 8in disk drives. The system is based on an 8088 processor with 128K RAM, 8in disk drives and 640 x 475 color graphics. Both MS-DOS and CP/M-86 are supported by a full range of development languages.

The NEC 8201 is a second generation version of the Kyocera designed briefcase portable. This battery-powered portable is based on a Z80A processor with 32K RAM, 32K ROM containing Basic and applications software and a 40 x 8 LCD display capable of 320 x 64 bit-mapped graphics. Mass storage is provided by cassette or removable, battery backed, 32K Rampack.

NEC manufactures a wide range of successful home and personal com— puters in Japan that may be distributed through the consumer electronics distributor, Rank-NEC.

NECISA was successful with the APC in Australia. After its release in 1982 it became popular with many computer dealers, offering a complete, cost-effective system that could be packaged with standard applications software. Then it became popular with programmers, who appreciated its design features. Winning *Your Computer's* "Computer of the Year" award helped NEC's aggressive advertising campaign and justified the company's investment in possibly the best support in the industry — who combine professional skills with an appreciation of the potential of microcomputers.

NEC has 27 value-added dealers and 61 computer dealers, including Myers. More sales are made by the value-added dealers, and NEC has established a direct sales force for large corporations and government organisations who want to deal direct with the manufacturer. NEC encourages its dealers to either carry NEC products exclusively, or at least not to stock competitive products. The 8201 portable is only available through Myers at present, due to the minimum 200-unit order required by NEC. This policy may change next year.

Barry Jeans sales and support manager, says the quality and commitment of the dealer base and support organisation is the basis of NEC's strategy. He says high quality, reliable Japanese manufacture, and efficient transport to Australia, will enable NEC to be competitive in the Australian market. Expected growth this financial year is 40 per cent, with revenues of $7 million from the APC.

Jeans says he regards the emerging corporate market as very important, and NEC has recently released APC communications enhancements for this market. The APC is based on a design for a sophisticated communications terminal and will help NEC compete for the volume sales the corporate market provides.

NEC has pursued an aggressive strategy, being prepared to invest in support and its dealers. However, it has been lucky. Next year, the company's success against better-organised competition will determine the extent of NEC's share of the Australian market.

Nissei Sangyo

NISSEI SANGYO is a Japanese Trading house that has imported computers to the Australian market for several years. The company imports the Oki for Sigma, the Hitachi Kokusai KDS for O'Reilly, and the NDK range of dot matrix printers.

In the second half of 1982 Nissei began to take responsibility for the distribution of Hitachi personal microcomputers with the establishment of a personal computer division, the release of the MBE 16000, and the takeover of the Hitachi Peach distribution in February 1983.

The Hitachi MB6890 — known as the Hitachi Peach — has been available in Australia for three years. Melbourne distributor, Delta Communications, convinced Hitachi to allow them to distribute the MB6890 in Australia in 1981. Hitachi agreed to test market the product and provided Delta with support to mount an effective advertising campaign that created widespread awareness of the computer. The cost of Australianising the product, the isolation of the 6809 processor from the Z80 mainstream, and peripheral problems and shortages caused sales to falter. Hitachi learnt enough from the exercise to launch the MB6890 into the other international markets, and Nissei Sangyo took over the distribution of the computer in February 1983.

The Hitachi MB6890 is a 6809-based, 32K RAM system with 8-color high-resolution graphics. A range of peripherals, including Z80A and 8088 coprocessors and disk drives are available. The system uses a Microsoft ROM-based operating system and supports the Flex and OS-9 operating systems.

The MBE 16000 is an 8088-based, 128K RAM, 5in disk drive, MS-DOS system supporting 640 x 200 B/W graphics and 8 color 320 x 200 graphics.

Nissei Sangyo inherited 83 dealers from Delta and pruned the list to 25, selecting dealers for their long-term commitment to Hitachi products. The company does not have a direct sales force, directing all sales through its dealer base, which it wants to expand to 50 dealers.

Sales of the MB 6890 and the MBE 16000 are about equal on dollar value, with monthly sales varying between 75 and 150 units. The installed base of MB 6890's in Australia is over 2500, with strong support from superusers and competitive pricing keeping the system viable. Like most of the 16-bit Japanese microcomputers, the MBE 16000 has been accepted in tertiary institutions and for technical applications requiring good quality color graphics.

Nissei Sangyo expects to release the complete range of Hitachi microcomputers in Australia with portable, superuser, desktop and multiuser systems. The MB6890 will be relaunched in 1984, when the Mark 5 version becomes available. The recently released Hitachi H1 MSX computer may be the first MSX home computer released in Australia, although Phil Cook, PC manager, believes the only real benefit from the home market is corporate exposure.

He says Nissei is after a significant presence in the microcomputer market, as he expects Hitachi to be one of the dominant Japanese suppliers on the world market within the next three years. Australia is a price-conscious market that is prepared to appreciate good products, he says, and expects growth of 30 per cent next year, as well as an across-the-board reduction in system prices.

Nissei Sangyo is attempting to establish an Hitachi dealer network that will compete in the open microcomputer market offering a range of products at competitive prices. The strategy takes the company closer to the approach of the motor vehicle market than the office products market. If Hitachi stays close to industry standards and continues to offer quality Japanese design, it can certainly establish a presence in Australia.

Sanyo office machines

SANYO Office Products is an Australian company that has had a long association with Sanyo, distributing a range of electronic office products under licence from Sanyo. The comany began distributing the MBC 2000 and MBC 3000, Z80A-based systems in 1981, but decided to concentrate on the MBC 1000 — a CP/M system.

Sanyo developed a lowcost multiuser accounting system based on the MBC 1000 that has become their most important product. The SSS accounting package uses a heavily modified CP/M operating system to support multiple users and accounting software is written in assembly language, using data compression techniques to provide large record capacity on a 320K disk drive.

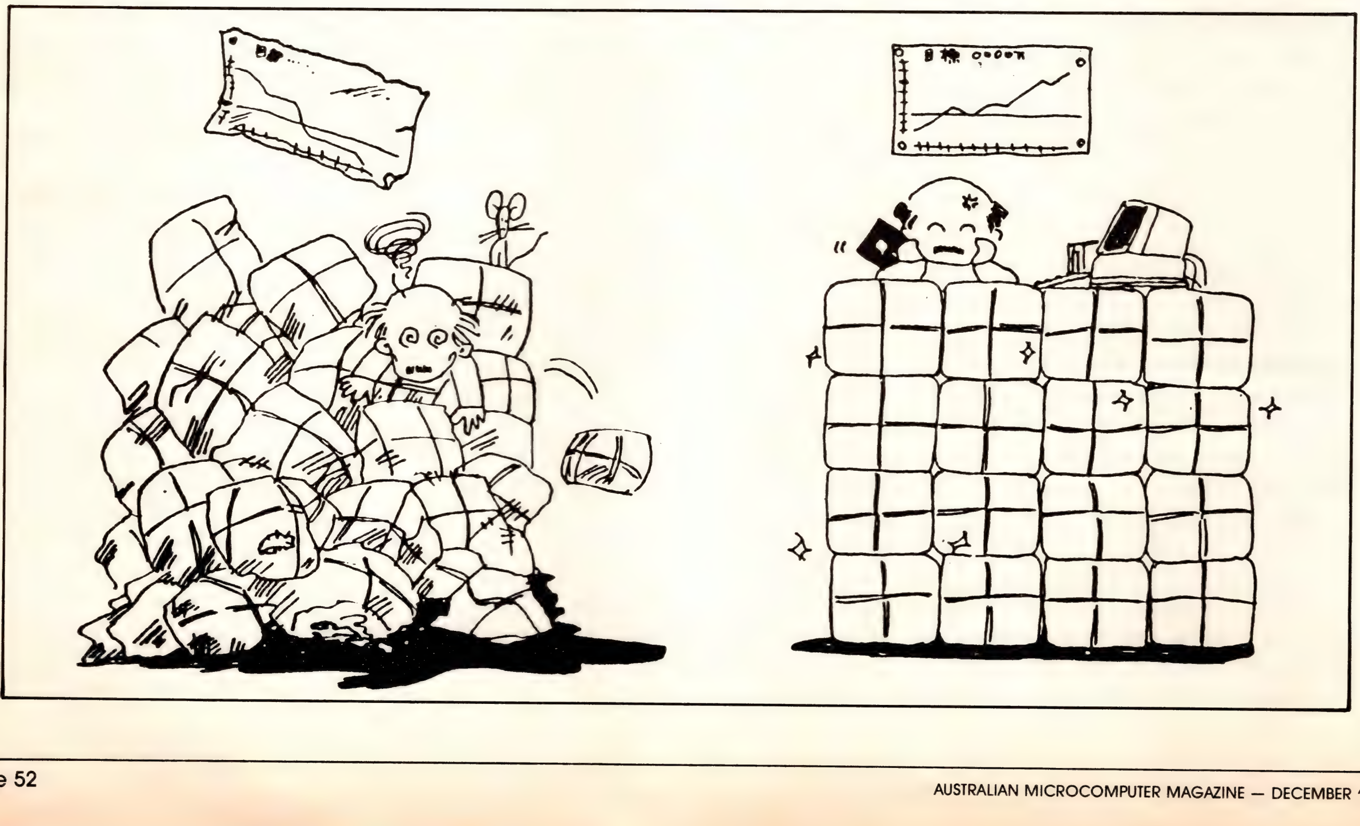
The SSS accounting package has accounted for 75 per cent of Sanyo's computer sales, although that is now changing following Sanyo's success with Telecom and in education. Mark Johnston says he has been able to sell all of the systems he can get from Japan. Sanyo has also pursued a "disseminated vertical market" approach, taking packages developed by dealers and making them available nationally, and preparing MBC implementations of several industry standard applications programs.

It is preparing to replace and expand it's product range in 1984. The MBC 1000 will be replaced by the MBC 1100, offering dual, double density 320K disk drives. This system will be configured to run the SSS accounting software.

The MBC 555, already shown at several exhibitions, is a low cost 8088-based, 128K RAM, MS-DOS system with color graphics option. The base unit will retail for less than $A2000 and will be targeted at the personal user. The MBC 4000 is an 8086-based, 128K RAM, CP/M-86 system with 640K disk drives.

Mark Johnston says he expects the market to be difficult next year, but believes Sanyo is ready to expand with its new range of machines.

Sanyo Office Machines has been very successful with the SSS accounting package, using it to establish a computer business. The new systems are standard machines with few distinguishing features. Success will depend on competitive pricing and the continuation of Sanyo's ability to effectively exploit market niches with packaged solutions.

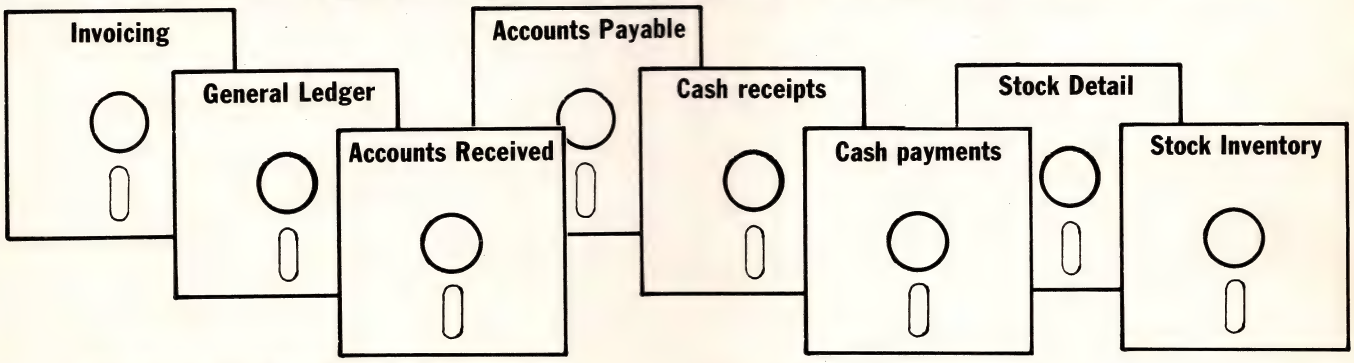


Non-Linear Systems combines...

KAYPRO

with Davidson Business Software

Includes eight packages that may be used alone or in combination.



The Kaypro-Davidson System is easy to use and requires no special training or skills. Economically priced it ensures that computerised business activities run trouble free. Generous report writing is available with each package.

Kaypro portable computers now come in three models: Kaypro 2/200Kb Disk, Kaypro 4/400Kb Disk, Kaypro 10-10Mb Hard Disk.

This range provides a selection of microcomputers for small and medium-sized businesses.

Non-Linear Systems (Aust) Pty Ltd
130-136 Miller Street,
West Melbourne, Vic 3003.
Telephone (03) 329 9951. Telex: 34082.
NSW: MTM (02) 661 4944.
QLD: L.E. Boughen (07) 369 12777.
SA: Computer Services (08) 352 7911.

Enter M012 on Enquiry Card

unison SUPERMICRO

Australian computers you can build a system on.

The problem with most PCs is they are generally single-user, single-tasking, floppy based machines. You can't add another user with access to the same data at the same time – and you can waste a lot of time waiting for the printer to finish before you start the next job.

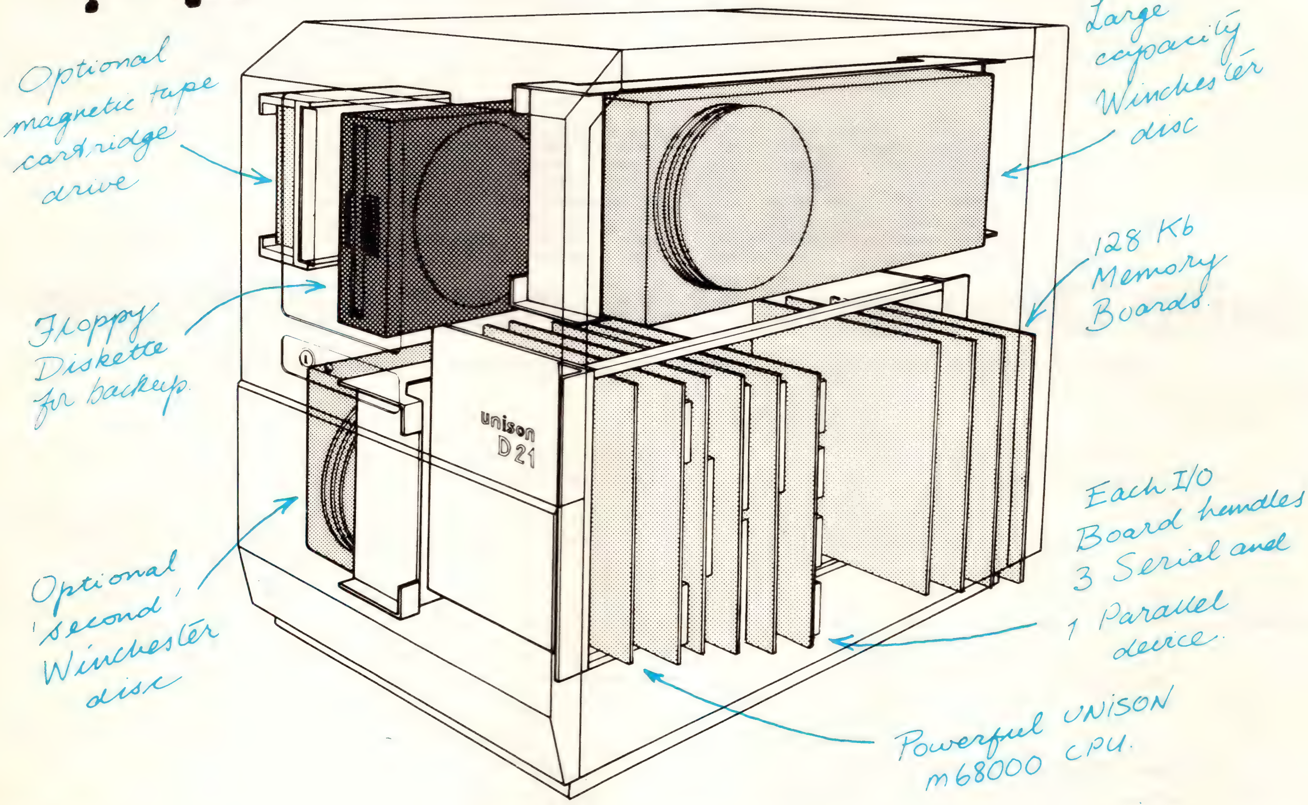
But PCs are cheap. And that's why people buy them. Even when the job at hand may really need a small minicomputer.

UNISON supermicros bridge the price/performance gap between PCs and Minis – providing minicomputer power on a PC budget.

The UNISON range of general purpose computers from Email Computer Systems has the powerful 16/32-bit M68000 CPU and SIRONIX* multi-user/multi-tasking operating system. Plus UNISON has a full selection of software development tools like a Database Management System, Office Automation Environment, Spreadsheet Calculator, Forms Package, Modeller, Mainframe Communications and Languages.

And if you need more . . . like some mature COBOL and BASIC application modules, UNISON can offer these too.

UNISON supermicros start at around the same price as a top end PC. Interested . . . then contact Email Computer Systems on (03) 728 4511 or send in the coupon.


Optional magnetic tape cartridge drive
Large capacity Winchester disc
128 Kb Memory Boards
Floppy Diskette for backup
unison D21
Each I/O Board handles 3 Serial and 1 Parallel device.
Optional 'second' Winchester disc
Powerful UNISON m68000 CPU.

EMAIL LIMITED
COMPUTER SYSTEMS
(Inc. in N.S.W.)

Cnr. Canterbury & Liverpool Roads,
Kilsyth, Vic. 3137.

Send me details for a system I can build on.

Name ______

Position ______

Company ______

Address ______

Postcode ______

Telephone ______

Email Computer Systems
P.O. Box 154, Mooroolbark, Vic., 3138

AM–UNI–006

SIRONIX is an Australian product derived from UNIX System III and Version 7.
UNIX and UNIX System III are trademarks of Bell Laboratories.

Enter M016 on Enquiry Card

Sigma-Oki

SIGMA Data is a minicomputer supplier, known for its involvement with Datapoint, Wordplex, minicomputer peripherals and Convergent Technologies supermicros. The company has a strategic commitment to US and Japanese manufacturers, and its association with trading house Nissei Sangyo led to a decision to distribute OKI microcomputers in Australia.

OKI is a Japanese industrial electronics company building microcomputers for industrial applications and business. In February last year, Sigma began distributing the OKI if800 Model 20 through its peripheral division. A personal computer division was established March this year to take responsibility for all OKI sales.

The current OKI range includes the Models 10, 20 and 30. All are Z80A, CP/M computers featuring the distinctive integration of system unit, disk drives, printer, and monitor, with good-resolution color graphics.

The Model 20 with 64K-bytes of memory and 5in disk drives is the standard model with the Model 10 unbundling some of the peripherals, and the Model 30 offering 128K-bytes of memory and 8in disk drives. Sigma has 53 dealers split 50/50 between storefront computer dealers selling a range of systems, and value-added dealers. About 60 per cent of sales are through the dealer network, the rest by a direct sales force to government, education and Top 200 companies.

Sigma's marketing approach has been to promote the "all in one" concept of the OKI and to establish an aftersales support and service structure. Service is provided using Sigma's nationwide facilities with agreements for onsite, return to base or a fixed charge maintenance plan.

A hotline service is provided and a software support group helps dealers develop and implement software packages. Developing the OKI's color capabilities has been a major part of this group's activity.

The Sigma Academy was established to provide enduser training, both for OKI users and the community at large. The academy provides courses on most standard applications' packages available on the OKI as well as programming and familiarisation courses.

Sales of the OKI depend on response to the distinctive integration of the system. Sigma reports good sales to users who appreciate this feature in small business, education and applications-oriented installations in large companies.

The OKI Model 50, an 8086-based multiuser machine is expected to be added to the range next year. Adrian Wood says he expects growth of 30-40 per cent in the market next year, with corporate sales starting to become significant.

He considers sales of 75-100 units a month satisfactory at present, but would like to expand Sigma's dealer network to 100 dealers next year. Sigma's recent, aggressive comparative advertising campaign has had a significant impact in establishing OKI's market presence Wood says.

Sigma is a traditional minicomputer supplier, with more flair than most, that has tried to use its experience to create a market for OKI systems. The OKI concept is distinctive, but unfashionable, and without a 16-bit system, Sigma will have to work hard to maintain its position in the microcomputer market.

Toshiba Australia

TOSHIBA, with a $US10.5 billion turnover, is the third largest electrical equipment manufacturer and the eighth largest company in Japan. It specialises in heavy industry, consumer products and component manufacture.

Toshiba Australia is a subsidiary company formed in 1978, after a joint venture with EMI in the mid-seventies. The first computer product, the T200, arrived in 1981 and was marketed through the Toshiba electronics office-equipment division. Dick Simpson was given responsibility for computer products, and Toshiba developed a marketing strategy late in 1981.

The current product range includes the original, 8085-based, T200 computer and two new systems released this year. The T100 is a Z80A-based, 64K, CP/M computer featuring color graphics and a LCD option that enables portable operation of the system.

The T300 is an 8088 based, 128K, MS-DOS computer, that uses dual 3in disk drives and features high-resolution color graphics. Toshiba also distributes the P1350 dot matrix printer, offering fast printing and a range of cartridge-based fonts that take advantage of the large pin matrix on the printhead.

Toshiba uses agents in all major metropolitan markets to distribute their computers. The agents, selected on a bases of long-term exclusive commitment to Toshiba products, provide their own support and service, backed by a software group and service support from Macroset.

A small direct sales force handles government and education sales. Toshiba has had some success with the T100, pushing it in vertical applications and has had surprising success in the competitive tertiary education 'classroom computer' market.

Toshiba says that it has been unable to keep up with the demand for the T300 since shipments began in June. Enhancements to the range next year will include diskless CP/M for the T100, which will increase its value as a portable computer and the development of vertical market packages that use the color graphics features of the T300. Full implementations of the P1350 are being prepared for other microcomputers.

Toshiba's strategy is for long-term growth in the Australian market, rather than immediate marketshare, relying on the proven ability of the Japanese to manufacture high-quality, cost-effective products. Toshiba's range of Pasopia home computers is not being sold in Australia, but may be introduced when the market stabilises.

Dick Simpson says few people realise the special character of the Australian market, with Japanese companies having a much higher profile.

His assessment of the market is that 100 systems a month at present, is acceptable.

Toshiba has encouraged the development of Australian-designed enhancements to their systems and hopes to use Toshiba operations in Europe and the US to market these products.

Toshiba is taking the Japanese approach to the development of the market and providing their systems remain competitive, should develop a significant presence in Australia.

LIFT OFF INTO THE WORLD OF COMPUTER COMMUNICATIONS

ONLY
$195*
Plus FREE
RS 232
Data Cable
Offer applies to
31/12/83

WITH

SHUTTLE

DATA MODEMS

TELECOM APPROVED * Plus Sales Tax

R.F. COMPUTER COMMUNICATION
2 LAWSON AVENUE
FRANKSTON, VIC 3199
TEL: (03) 781 4461

Enter M034 on Enquiry Card

Japanese microcomputers available in Australia

Make	Model	Processor	Memory	Storage	Graphics[1]	Color	Operating System	Price[2]
CANON	AS-100	8088	256K	5" disk	640 x 400	8	CP/M-86, MS-DOS	$5820
MITSUI	M5	Z80A	20K	cassette	256 x 192	8	ROM	$395
	M23	Z80A	128K	5" disk	640 x 256	8	SB-80	$4400
	M343	8086	256K	5" disk	640 x 400	8	CP/M-86, MS-DOS	$11,375
	M68	68000	256K	5" disk	640 x 400	16	CP/M 68K	$6800
NATIONAL PANASONIC	JB-3000	8088	96K	5" disk	640 x 400	8	CP/M-86, MS-DOS	$4802
NEC	APC	8086	128K	8" disk	640 x 475	8	CP/M-86, MS-DOS	$995
	8201	Z80A	32K	cassette	320 x 64 (LCD)	—	ROM	$4914
NISSEI SANGYO (HITACHI)	MB6890	6809	32K	5" disk	640 x 200	8	Microsoft	$1314
	MBE16000	8088	128K	5" disk	640 x 200	8	MS-DOS	$4794
SANYO	MBC 1000	Z80A	64K	5" disk	—	—	CP/M	$3395
SHARP	MZ721	Z80A	64K	cassette	320 x 200	8	ROM	$499
	MZ3530	Z80A	64K	5" disk	640 x 200	8	CP/M	$2495
	PC5000	8086	128K	bubble	640 x 80 (LCD)	—	MS-DOS	$2700
SIGMA OKI	if800 M10	Z80A	64K	5" disk	640 x 200	8	CP/M	$1435
	if800 M20	Z80A	64K	5" disk	640 x 200	8	CP/M	$4990
	if800 M30	Z80A	128K	8" disk	640 x 400	8	CP/M	$6385
TOSHIBA	T100	Z80A	64K	5" disk	640 x 200	8	CP/M	$2530
	T200	8085	64K	5" disk	—	—	CP/M	$3900
	T300	8088	128K	3" disk	640 x 500	16	CP/M-86	$5267

1. Black and white resolution. Color resolution is reduced on some systems.
2. Retail price for the basic system, usually with B/W screen.

Caulfield Business Computers

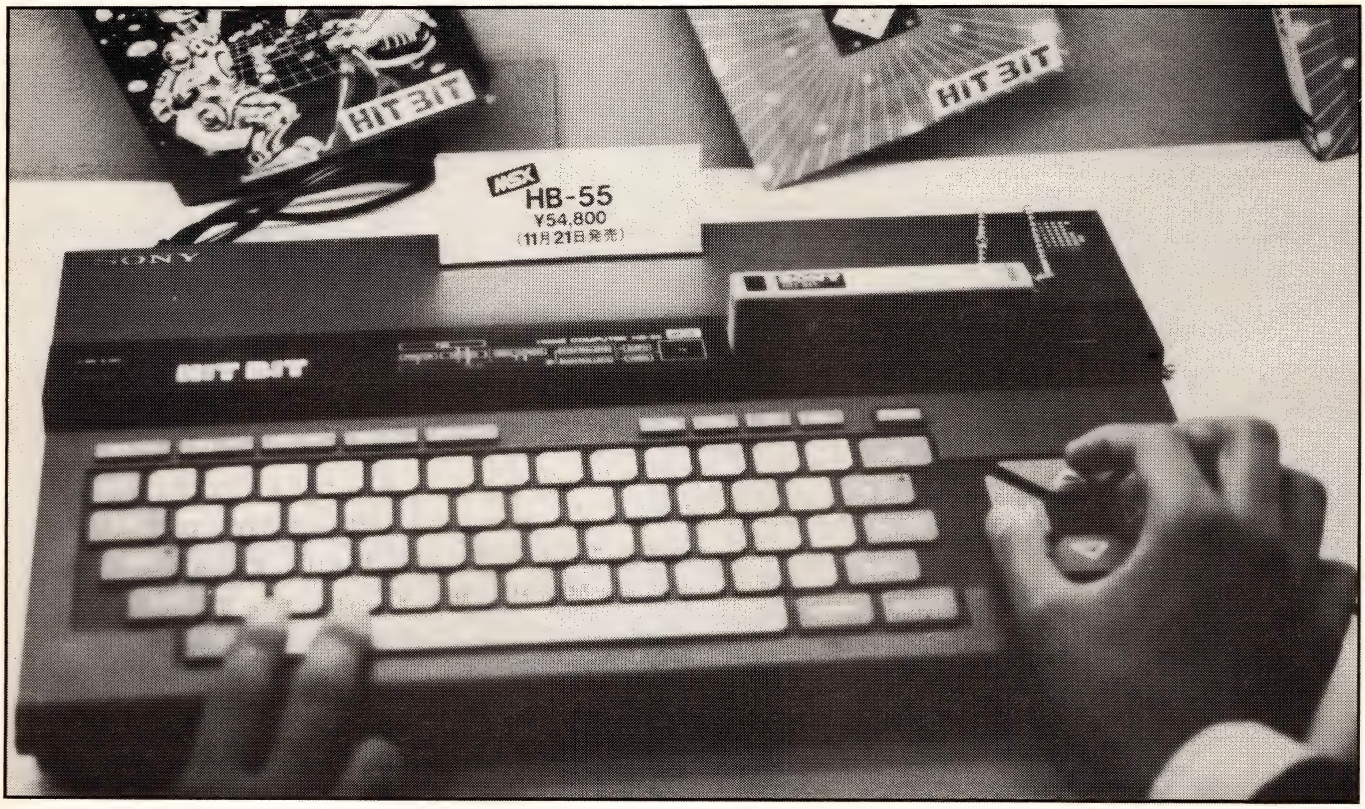
Lightweight, compact electronic printer

The Brother CE-60 electronic typewriter has full interfacing capability with most micro-computers. To meet your future office and computing needs.

brother.
CE-60

Caulfield Business Computers
874 Glenhuntly Road,
Caulfield South, Vic 3162.
Telephone (03) 528 4555.

Enter M063 on Enquiry Card



A Japanese stranglehold

The latest Japanese Electronics Show (JES), in October, indicated strongly why Japan will have a stranglehold on home computing within four years. Ian Webster reports:

OCTOBER is microelectronics show month in Asia, with shows in Japan, Taiwan, South Korea, Singapore and Hong Kong attracting the international industry interested in investigating Asian developments.

The Japanese Electronics Show (JES) is an industry show, alternating between Tokyo and Osaka, that presents the complexity of the Japanese industry and the dominance of semiconductor companies. We tend to regard these as computer or consumer electronics companies.

This year's exhibition was spread over five halls, with 300 exhibitors. Most exhibitors were microelectronics and electronic component or testing equipment manufacturers.

The consumer electronics section was one of the largest, but was completely dominated by 10 exhibitors, Hitachi, Matsushita, Mitsubishi, NEC, Pioneer, Sanyo, Sharp, Sony, Toshiba and Victor. The show was dominated by developments in display technology, including large (640 x 200) LCD panels and a vast array of devices using CRT, LED and voltage fluorescent, display (VFD) technologies.

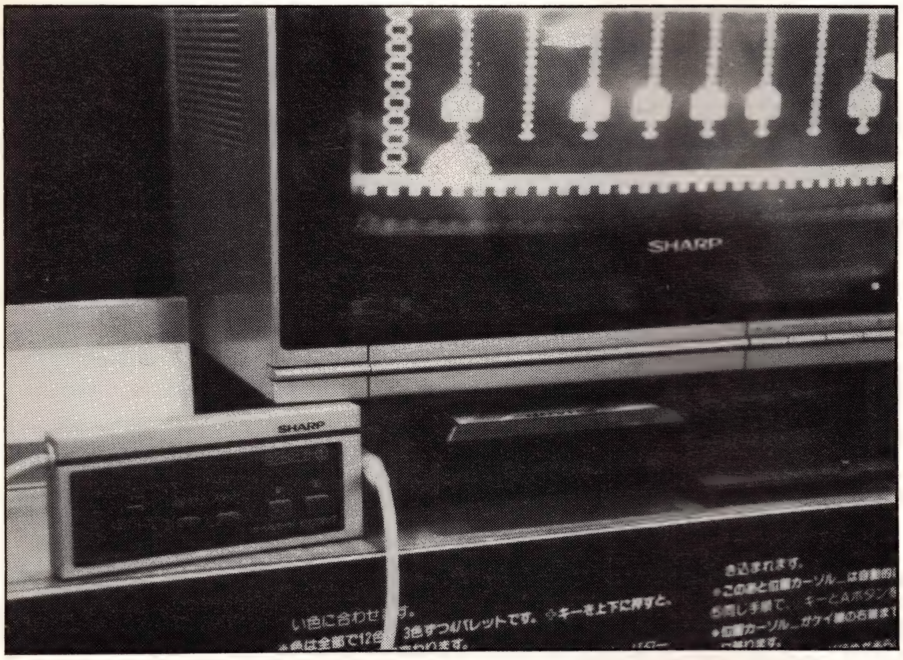
The other important feature of the show was the Japanese industries' commitment to Microsoft's MSX standard became a reality at the show, but is only only one aspect of their strategy to first create the Japanese market before entering the Western market, just as they have with consumer electronic appliances.

All leading semiconductor companies were displaying LCD panels of all shapes and sizes. The largest,offering 640 x 200 resolution, attracted most attention, especially from US visitors. These panels are quite large, measuring 15 x 4in.

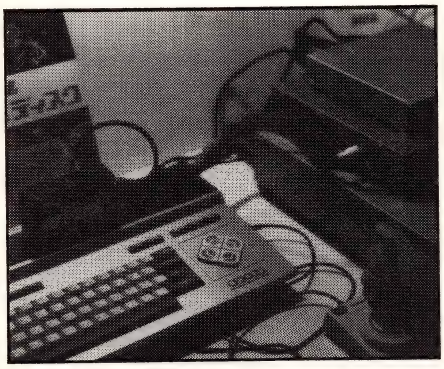
Several prototype color panels were displayed. The color is pale and translucent confined to 32, 100 x 40, blocks within the panel. Each block is capable of displaying eight colors.

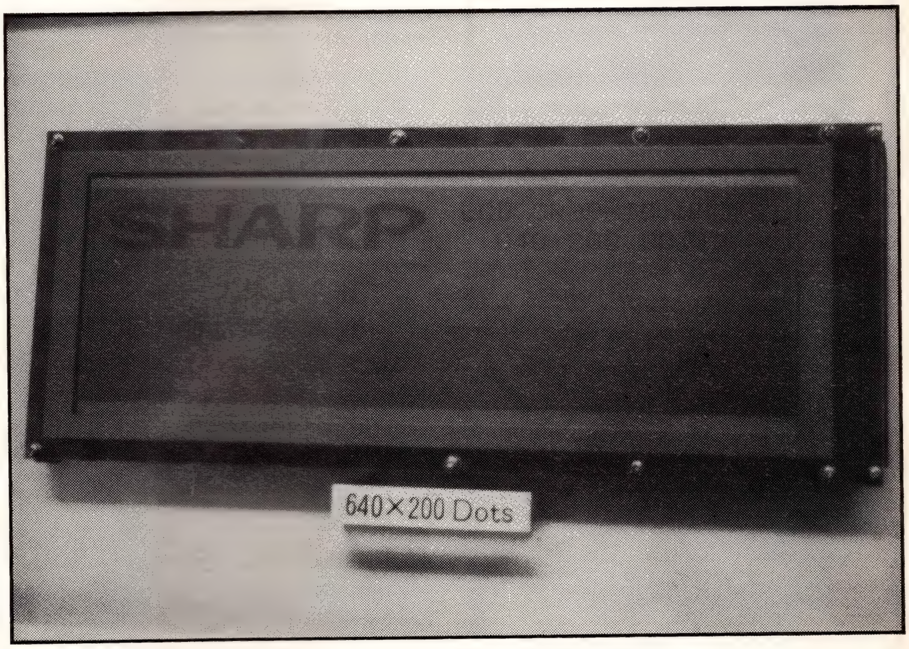
As well as samples of small plasma displays and LED devices there were many examples of VFD. These displays were configured as car instrument or measuring equipment displays, where solid blocks of brilliant color are needed. This display technology seems ready to be used in car dash panels and any appliance needing an analog status display.

Japanese color monitors provide superb image quality and new developments included screens with almost square corners to eliminate the distortion of the image at the corners of the screen and size variations. The device that attracted the most attention from the Japanese at the show was Sanyo's color LCD television prototype based on a 3in LCD panel of amorphous FET active arrays, and color polarisers.



Above: *Sharp has integrated a video game board and a television receiver.*
Right top: *The Hitachi H1 is the best looking MSX machine and features a large red stop button.*
Right bottom: *The physical size of high resolution LCD panels will provide problems for portable computer designers.*
Below: *Cables and peripheral boxes characterise MSX machines.*





The quality of the display was good, with the whole battery powered unit — not much bigger than a 5in floppy disk. There were many microcomputers on display, but few relevant to Western markets.

NEC, which dominates the Japanese market displayed several implementations of the APC, featuring voice and graphics tablet input. A complete range of peripherals for the 8201 portable, including disk drives, was shown.

Fujitsu is emerging as an aggressive challenger to NEC, using television personality Tamori to promote its family of 6809 machines. The Fujitsu FM-7, which retails for $US600 is a good example of current Japanese design featuring the 6809 with Z80A coprocessor, 64K-bytes of RAM and 48K-bytes of video RAM supporting high-quality 640 x 200 color graphics.

Hitachi released the M5 version of its MB6892 computer, a popular 6809-based processor machine that has had some success in Australia. Sharp showed three interestig microcomputers, released earlier in the year, that are the closest to current US design concerns of any Japanese microcomputers.

The portable PC-5000 was shown with a full range of peripherals including disk drives. The MZ 5500, one of the best-looking microcomputers the Japanese have designed, based on an 8086 processor with 256K-bytes of RAM, excellent 640 x 400 color graphics with mouse input and two built in slimline 320K disk drives.

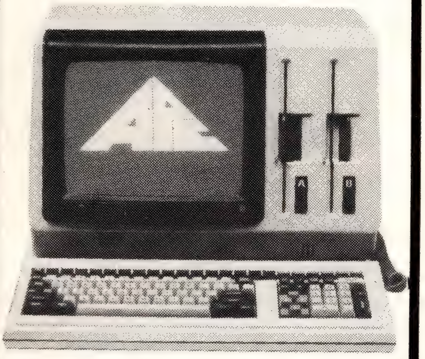
The Sharp X1, priced at less than $A1000 is one of the first microcomputers to be designed with genlock capability so that it can be used with video equipment. The X1 is available with interfaces for videodisk, video recorders and cameras.

The Aniputer, released by Victor, is a $US7000, 16-bit microcomputer, developed as a dedicated videographics system, featuring videodisk, video

COMPUTER
AIDED
DESIGN

ENTERCOM
COMPUTER CO.

NEC



The Advanced Personal Computer.

A SOPHISTICATED
DESIGN DRAFTING
PACKAGE STRICTLY
FOR PROFESSIONAL
USE IN ENGINEERING,
ARCHITECTURE &
SCIENCE

FOR FURTHER INFORMATION
AND DEMONSTRATIONS BY
APPOINTMENT ONLY CONTACT:

DISTRIBUTORS OF APC-CAD

ENTERCOM
COMPUTER CO.

136 BRIDGE ROAD,
RICHMOND, VIC 3121
(03) 429 5883
(03) 428 5714

Enter M069 on Enquiry Card

recorder and camera input. The Aniputer can generate and animate color graphics with 255 x 220 resolution and merge them with video images.

The device is driven by a small button box and joystick offering facilities to draw, paint, move, scale, rotate, zoom and animate objects, then merge the images with video images.

It is an exciting system that will bring the emerging area of video and computer graphics within the reach of many people.

The peripherals on display were disappointing, with Epson and Epson look-a-likes dominating. Printers are getting smaller, thinner and faster, but there is little evidence of a breakthough in price or quality. Several exhibitors showed color printers, either using colored ribbons or ink-jet technology.

As far as microcomputers are concerned, the show belonged to Microsoft's MSX.

The consumer electronics section was all MSX, with seven companies were promoting MSX machines, all priced at less than $US400.

They vary slightly in keyboard layout and greatly in packaging, but all appear to conform to the standard. Victor/JVC released their Victor PC, Sanyo the MPB-5, Mitubishi the MSX 8000 and Hitachi the H1.

Three companies released MSX machines as extensions of their existing range of personal computers — Toshiba with the Pasopia IQ, Sony with the Hit Bit 55 and National Panasonic with the MSX 2000.

None of the machines were particularly stylish, all offering the vast array of peripheral enhancements that is typical of bottom-end Japanese design. Most featured proper keyboards with genlock capability allowing them to be used with video images.

The machines were displayed as part of a home entertainment centre with stereo, video recorder, television and MSX computer. The concept of MSX was used extensively to promote the machines, with its promise of software compatibility. A large range of games software, including 30 game cartridges and the first issue of the MSX magazine from Ascii-Microsoft were available.

Sharp has taken the concept one step further, offering the C1 television for $US450, including a game cartridge slot and small joystick attachment. The microcomputer board being used appeared to be a Sega SC3000 board offering similar performance to a Colecovision game system.

National Panasonic showed a protype home information centre that went even further, with a system that included telephone, cable, broadcast and videotext capabilities, with a touch screen and built-in computer. The result and the demonstrations were so convincing that I have no doubt that this is the future of the home computer.

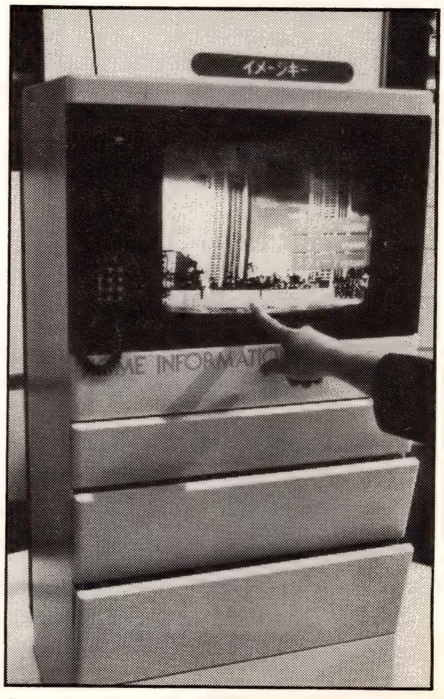
The combination of touch screen, visual information and the processing intelligence of a microcomputer system will prove irresistable to the information culture.

A feature of the show was the enormous range of magazines and books supporting and documenting Japanese microcomputers.

Japanese manufacturers believe in telling users as much as possible about their computers using magazines to add to the documentation provided with the machine.

The JES illustrated the strategy of the Japanese industry already providing much of the technology used to build microcomputers in the West.

They will continue to develop this technology, but will concentrate their consumer electronics efforts on the development of home computing. Within two to three years this market will belong to them. ☐



Panasonic's home information concept.

MSX makes it move

Fifteen companies have adopted MSX as a micro computer environment standard. But, as Ian Webster reports, there are doubts about Microsoft's ability to deliver the goods.

The concept MSX was promoted heavily at the Japan Electronics Show.

MSX is a definition of a microcomputer environment proposed by Microsoft. This proposed standard for home computers has been adopted by 15 companies, Spectravideo, NEC, Hitachi, Matsushita, Sony, Canon, Mitsubishi, Toshiba, Fujitsu, Kyocera, General, Yamaha, Pioneer, Sanyo and Victor/JVC, who have said they will build MSX computers.

The standard defines a Z80A-based machine using VLSI sound and graphics chips with a 32K ROM-based operating system and Basic written by Microsoft. The purpose of the standard is to provide software compatibility between machines so the continuing investment needed to provide software can be shared between manufacturers and the software industry, and to control manufacturing costs.

A standard design with the promise of large volume will encourage the development of VLSI that will keep the design price competitive. The success of the standard depends on the hardware delivering an acceptable consumer environment unlikely to be superceded for several years, and the software environment providing acceptable computing experience to consumers.

The hardware design is not new. The approach was pioneered by Texas Instruments TI99/4 with good resolution color graphics, sprites and three-voice, eight-octave sound and the Commodore 64 provides an environment almost identical to an MSX machine.

A MSX Z80A machine is based on a 3.579Mhz processor with 32K-byte of ROM and a minimum of 8K-bytes of RAM.

The video display processor is the TMS 9918A supporting 40 x 24 text, 256 x 192 high-resolution graphics in 16 colors with sprites. The sound chip is the AY-3-8910 offering control over three-voices with an eight-octave range.

An Intel 8255 chip is used for I/O, supporting the keyboard, cassette, sound output and two joysticks. The keyboard features 10 function keys, cursor diamond, editing keys and a stop key. A basic system has one 50-pin cartridge slot and the full implementation has two cartridge slots with expansion interface for more cartridge slots.

RAM is organised by cartridge slot. Four primary slots are supported; slot 0 is internal to the machine with the other three appearing as cartridge slots. Each primary slot can support four secondary slots, each capable of addressing 64K-bytes of RAM.

All interface devices except keyboard, cassette, monitor and joystick require a cartridge interface. The MSX ROM occupies the bottom half of memory in the first primary slot.

Up to 32K-bytes of RAM can be installed inside an MSX machine. There is a suggestion in the MSX reference manual that an implementation of MS-DOS may be available for the machine with support for 8, 5, 3¼ and 3in disk drives.

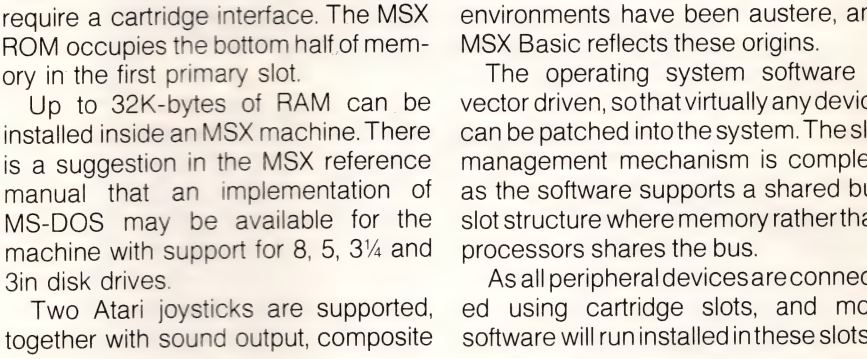
Two Atari joysticks are supported, together with sound output, composite and direct video and 12200/2400 baud FSK cassette data storage. The hardware design is compact, realistic and borrows from most of the successful 8-bit personal computer designs of the past five years.

The software is derived from a different tradition. It is Microsoft Basic, derived from the companys most successful implementations for Z80 and 8088 processors. None of the 6502 Basics have been very convincing.

These implementations started with the TRS-80 and have gone through Microsoft Basic 4-5 to Gee Whiz Basic for the IBM PC. All of these environments have been austere, and MSX Basic reflects these origins.

The operating system software is vector driven, so that virtually any device can be patched into the system. The slot management mechanism is complex, as the software supports a shared bus slot structure where memory rather than processors shares the bus.

As all peripheral devices are connected using cartridge slots, and most software will run installed in these slots, it



is an essential part of the system. Microsoft has released details of all zero page vectors and variables, operating system hooks and the slot management software.

MSX Basic is based on Microsoft Basic version 4.5 with allusions to GW Basic. It is similar to the Basic that will be available on the IBM Junior.

The Basic has a full screen editor and supports variable names of any length, but only two significant characters and interger, single and double precision numeric variables.

The implementation supports the full range of Microsoft Basic commands, statements and functions. Device specific functions include screen, WIDTH, LOCATE, COLOR, CIRCLE, LINE, PAINT, DRAW and sprite commands PUT SPRITE and SPRITE for graphics, PLAY for sound and joystick, cassette, and function key support.

Files can be saved and loaded as Ascii, tokenised or Binary format, and sequential files are supported. The CALL statement is used to implement extensions to MSX Basic, with CALL (statement name) vectoring the interpreter to a cartridge slot that contains the statement code.

This feature will enable all MSX peripheral devices to be operated using Basic commands. The implementation is thorough, as would be expected from Microsoft.

The implementation, however, reflects the austere environments of the TRS-80, CP/M machines and the IBM-PC. Microsoft has had little experience with sprite-based Logo influenced color environments that support home computing today.

The support of these features is essential to the quality of the user's experience. MSX has very poor support for sprites and sound, two key features in this type of machine.

MSX is the product of two separate aspects of microcomputer design, joining the hardware environment of hot entertainment-orientated machines with the severity of Microsoft's Basic software. While Microsoft can be expected to capitalise on its investment in its Basic interpreter, the company is also committed to develop the user interface and quality software environments.

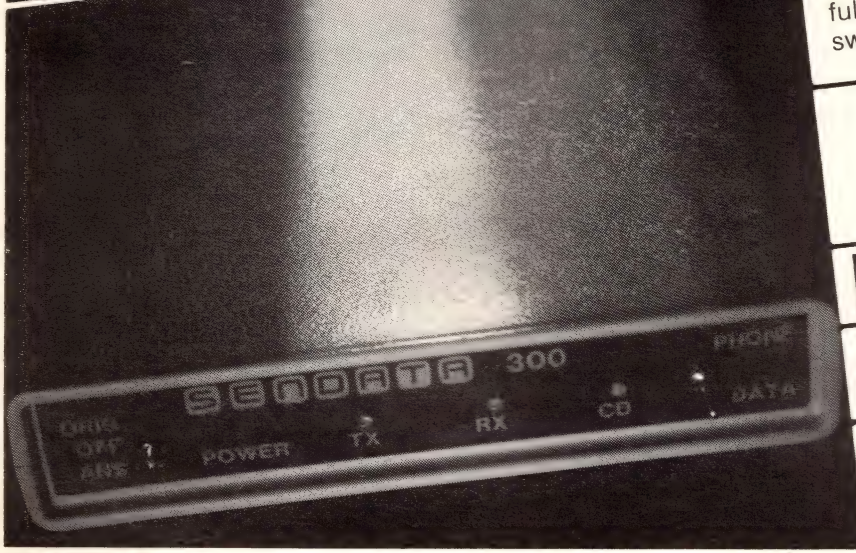
With a product like MSX, potentially one of the most important Microsoft products and a licence to print money, Microsoft could have tried to create an important user-orientated Basic environment.

MSX is initially inteded as a strategy to create a home computer market in Japan. Ascii-Microsoft is reported to be negotiating with the South Korean and Taiwanese industries to produce MSX microcomputers.

Distributors who source their products from these comapnies will bring MSX into the world market and eventually the Japanese will bundle the machine, if it is successful, into their integrated home entertainment products.

The hardware design should be adequate for the purposes of MSX. The quality of the graphics is about as good as can be produced on television receivers and software designers have shown they can produce high-quality, interesting programs for this environment. It remains to be seen whether Microsoft's MSX Basic is capable of providing consumers with a useful environment.

Microsoft's haste to capitalise on existing investment, coupled with Kay Nishi's immaturity as a designer and the programming bias of the existing Japanese personal computer market may stop MSX achieving the long-term success the concept deserves. Microsoft must do better before the proposed standard becomes a standard. ☐



Sendata
300 Modem
Direct Connect

A new direct 300 bps modem that is no taller than a 50c piece and fits snugly under the base of a telephone, has been released by Australian communications modem manufacturer, Electromed.

Called the Sendata 300, the modem is simple to operate and does not require operator training. It plugs into a telephone wall socket plug and becomes fully operational with the flick of a switch by the operator.

- Full duplex.
- Simple operation.
- Fits under telephone base.
- Telecom approved.

SENDATA

OEM AND DEALER ENQUIRIES WELCOME
ELECTRO·MED
ELECTRO-MEDICAL ENGINEERING P/L

69 SUTHERLAND ROAD, ARMADALE,
VICTORIA 3143, AUSTRALIA
TELEPHONE: (03) 509 5844.
TELEX: AA34008

Enter M046 on Enquiry Card

What has happened to the Japanese computer invasion? Mark Fruin, Professor of Japanese Business and Economic History at California State University, says it's low profile, but the . . .

Japanese invasion limbers up

THE long-expected invasion of the North American market by Japanese computer makers has not materialised, and everyone is beginning to wonder where the Japanese are.

The Japanese are coming, and in many ways are here already, even if their presence is not always obvious to casual observers of the microcomputer industry.

The Japanese are hard to see, partly because they are everywhere. The activities of the major Japanese computer companies are truly global and because of this, the intensity of their efforts in any single market is not apparent.

The major Japanese companies are stalking four geographically dispersed markets — East Asia, South-East Asia, North America and Europe. Because the requirements of each of these markets vary, the degree of Japanese market penetration in any of them has not been remarkable.

There is no doubt the Japanese are coming, however, and that they are coming at a carefully measured and monitored pace.

As the domestic production of computers in Japan reaches a scale sufficiently large to supply all, or most, of these geographically diverse markets at the same time, computer manufacturers in Japan will be able to take advantage of the economies of scale and of the learning curve. They will then be able to supply the major markets they have identified.

The rapidly falling prices of microcomputer systems in Japan during the past few months underscores this point. Sixteen-bit machines with large processing and storing abilities can be had for $US2000 to $US3000, and the selection and price of monitors, drives, printers and other peripherals are increasingly attractive.

Fujitsu, for example, has boosted monthly production of its two models of personal computers to 30,000 units a month, and the lower-priced 8-bit Micro-7 is priced at just over $US500 for CPU and keyboard.

Consumer electronic companies, particularly Sanyo, Sharp, Casio, Seiko and Matsushita, are beginning to bring out computers marketed and bought as household necessities — tools as well as toys for modern living.

Once the manufacturers can successfully package small computer systems in this manner, we can expect the Japanese to do as well with micros as they have done with other standardised consumer products. Because the Japanese are targeting markets worldwide, they have many problems to overcome.

If the Japanese were content to enter only the North American or the South-East Asian market, for example, their task would be much easier. Hardware and software could be standardised without difficulty; regional financing could be lined up; a phalanx of trained salesmen, technicians and managers could be quickly dispatched.

North America is not the sole target, however, and it would be unwise for the Japanese to focus narrowly on the North American market, because Canada and the United States are not the whole ball game. Without doubt, North America is the single most important innings in the ball game, but global computer supremacy is not a one-innings contest.

Accordingly, Japanese computer companies are slowly accumulating the know-how to compete in many markets simultaneously. Such a strategy requires patience, diligence and an expansion outward from Japan to meet the competition.

Some measure of difficulty of such a global approach can be seen in the organisational problems faced by Japanese in different countries. The English spoken in New York, London and Singapore, for example, varies enough that second-language speakers of English would have considerable trouble dealing with customers in those locations.

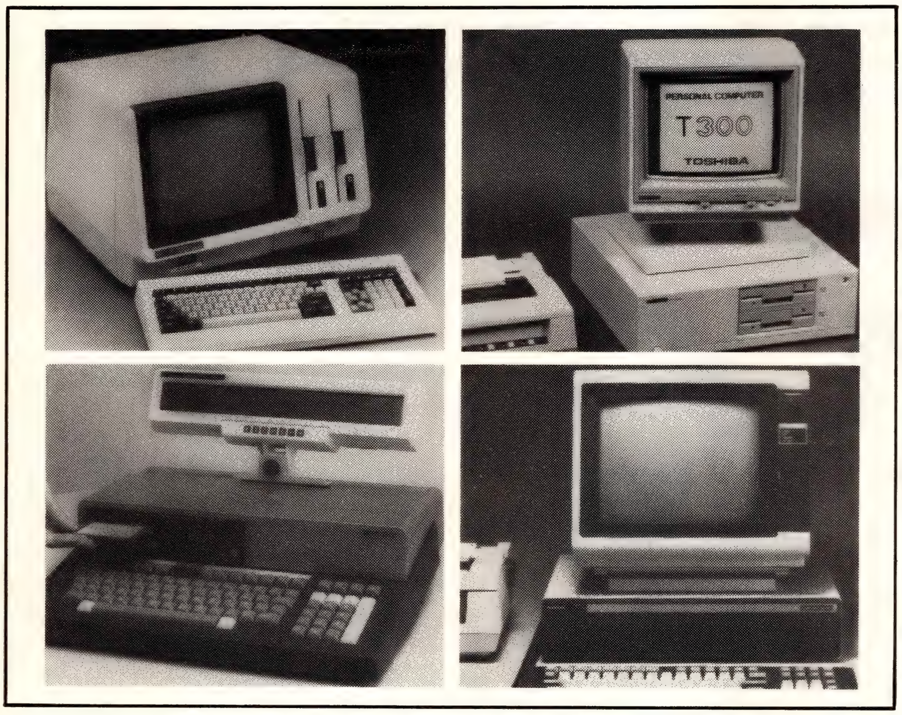
Language difficulties are, in some ways, among the most easily solved problems of multinational business. Legal differences are far more important, and country-specific styles and structures of management are absolutely critical.

Overseas employees of Japanese computer groups have to learn to cope with these and other complexities before they can effectively implement their global approach. In short, Japanese computer makers have only begun to venture overseas in the past two, and it will be another two years before they master the course.

Most critical to the success of Japanese computers overseas are the problems of sales and distribution. We forget, now that we are symbiotically attached to our Sony Walkman stereos, that it took the better part of a decade for Japanese consumer-electronic goods and even Japanese motor vehicles to become securely established in overseas markets.

At the start of the 60s, Japanese transistor radios were just beginning to hit the market. Japanese cars were still rather unusual as recently as the early 70s. These two types of Japanese products established their beachheads overseas without fanfare and without receiving all the attention the Japanese computer industry gets.

Besides Japan, which is the world's largest *concentrated* market for computers, there are four other countries in East Asia whose languages use ideographs or characters: the People's Republic of China, the Republic of



Japanese microcomputer design by NEC, Toshiba, Sord and National Panasonic.

China, North Korea and South Korea. The total population of these five countries exceeds 1.25 billion people.

It is one of the world's largest potential markets for computers, even if the level of computer utilisation is not impressive at present. All these countries require computers that can handle characters in all of their forms, as used in the languages of East Asia.

Furthermore, selling transistor radios was a piece of cake. They were small, cheap, reliable and user-friendly — all you had to do was turn them on. It is easy to forget how slowly and how innocuously Japanese transistor radios, stereos, cameras and watches claimed the lion's share of their respective markets.

Computers are far more heterogeneous in form and function than were the earlier products with which the Japanese scored such significant successes. As a result, the Japanese will have to find solutions to many difficult sales, service and distribution problems before Japanese computers can be sold overseas in large numbers.

Consequently, Japanese computers will not begin to be exported in large numbers until 1984-85. By the end of the decade, though, we can expect Japanese computers to claim at least 30 per cent market share in all of the markets they have earmarked.

Another reason for the slowness of the Japanese computer invasion is the multiple-function approach the Japanese computer companies are pursuing. This is an aspect of the global approach I discussed earlier.

Almost all Japanese computers can be programmed and operated and their output can be printed in either character-based languages or in languages that use the Latin alphabet.

The local market requires Japanese computer makers to produce machines that have this multiple-function ability. No other major computer manufacturing country worries as much about character-generating abilities.

Such built-in multiple-function features demonstrate the determination and the savvy of Japanese computer makers. By providing a variety of functions in the same machine, Japanese computer companies can achieve economies of scale in a relatively narrow line of products by serving the needs of many markets simultaneously.

A final reply to the question, "Where are the Japanese?" would be a retort that they are here already, although their presence is often camouflaged by joint ventures, OEM arrangements and selling through mass retailers.

It is likely many of the parts in your present computer and its peripherals came from Japan. Look inside your CPU, printer and monitor, and you are likely to find them full of Japanese integrated circuits, circuit boards, switches and connections.

It is not just the smaller parts that are Japanese-made. Floppy-disk drives, printers, monitors, keyboards and LCD readouts, for the most part, also originate in Japan.

Some leading American and European computer manufacturers have significant ties with Japanese groups. Fujitsu sells through TRW, Amdahl, ICL and Siemens; Hitachi does the same with National Advanced Systems (NASCO), and BASF and Olivetti.

Mitsubishi Electric, maker of the Multi-16, a popular and powerful multitasking micro, has a link with Sperry Univac. Matsushita, the consumer-electric giant of Japan, has recently concluded an agreement with IBM to develop jointly a line of small personal and office computers.

What your best friends won't tell you is that the Japanese are here already, even if their presence is shielded for the moment by the casings on your machines and by the reputations of the US companies with which they are associated.

We often hear that the Japanese are behind — way behind — in software. This is undoubtedly true, but just as the Japanese can and do buy hardware parts and components overseas, so too, can they buy software overseas and enter into software-development projects with US software houses.

The real bottleneck is that Japanese hardware manufacturers develop most of the software for their machines themselves, and so there is no large, competitive and independent software industry separate from hardware makers in Japan.

Reduced competition means less choice and more cost for the software available. Software is a product like any other. As long as the Japanese can buy it overseas, contract for it overseas and build machines that can run on overseas programs, the lack of a vibrant software industry will not present significant barriers to the sale of large numbers of Japanese microcomputers overseas.

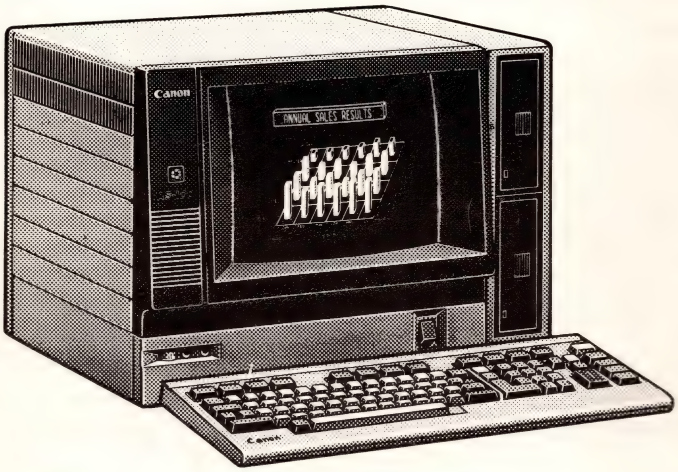
The moral of this story is that the Japanese have only part of the North American, European and South-East Asian markets so far, but that they are beginning to exert a presence in all of these markets and computer makers from these regions have practically none of the Japanese market.

Although the likelihood of the Japanese increasing their share and influence in these other markets is not guaranteed, it's certain they are coming, and it would be wishful thinking to expect anything else. □

Before buying a micro-computer make sure nothing is missing

With business requirements changing at a rapid pace it is vitally important to choose a computer that will meet these demands and grow with you.

That is precisely why we designed the AS-100. It is one micro-computer that not only caters for today's needs but also ensures a wise investment in the future of your business.



Canon 16-bit microcomputer **AS-100**

COMPUTER SYSTEMS

The all important software... Canon's responsibility

The AS-100 facilitates access to nearly all the software on the market today. But also when you buy a Canon computer you can select from Canon's own library a programme that best suits your needs. From standard business programmes through to specialised industry packages, Canon's software will save you valuable time and money.

Because Canon took on the responsibility of writing and developing these Australian programmes, we also take on the responsibility of seeing you have a smooth operation all the way.

User friendly keyboard

The spacious keyboard was specifically designed for operator ease and comfort. Commands are quick and natural and operating errors are eliminated automatically.

Powerful memory functions

The AS-100 incorporates the 16-bit 8088 microprocessor as its central processing unit to give fast large volume calculations and greatly reduces job handling time. The memory can be expanded up to 512K-bytes for mass data processing.

Computerise with confidence

When you deal with a world famous company like Canon you can have complete confidence because all Canon computers are designed, manufactured, sold, programmed and serviced by the one company...Canon.

Very impressive

Let us prove that Canon offers the best computer system in the business. Contact Canon in your state for a no-obligation demonstration or free brochures on Canon's hardware and software.

CANON AUSTRALIA PTY LTD

MELBOURNE: Tel 20 3213
1 Hall St, Hawthorn East, Vic 3123

SYDNEY: Tel 887 0166
1/37 Waterloo Rd, North Ryde, NSW 2113

ADELAIDE: Tel 352 5366
314 South Rd, Richmond, SA 5033

BRISBANE: Tel 44 7436
182 Melbourne St, Sth Brisbane, Qld 4101

PERTH: Tel 328 8311
285 Lord St, East Perth, WA 6000

Enter M018 on Enquiry Card

Wanted!

For its mind. Not just its body.

The best looking, most intelligent and responsive 8/16* bit in town.

Introducing RDM Computer System

Here is the first serious, Australian designed and manufactured business computer. It uses as its base the Australian designed Aussie Byte Board, developed by R.D.M. Computers Pty Ltd.

This board is so advanced that other computer manufacturers are switching to it, rather than using imported boards in their own systems.

Protection of Software Investment

The RDM System will support many operating systems, therefore many applications packages.

The 8-bit system supports single-user CP/M 2.2, CP/M PLUS (Version 3) and multi-user MP/M II operating systems.

Hardware Flexibility

The RDM Computer System includes 256Kb of RAM, an adjustable, high resolution VDU with dedicated 64Kb of RAM and a separate keyboard with numeric keypad.

Standard connectors at the rear of the system allow for the addition of three terminals/printers, a Centronics printer and a modem. Upgrading is achieved by simply plugging in the desired peripherals.

Each system will support a number and variety of disc units — up to four 5¼"-8" diskette drives AND up to four hard disk drives.

* RDM will soon offer an optional plug-on 16-bit board to support MS-DOS, Unix and CP/M-86 operating systems.

Additional System Functionality

In addition to multiple operating systems, terminals and disk drives, the RDM System can support a light-pen for CAD/CAM graphics, and, a speech synthesis option.

The Bottom Line

Whether you are a prospective end-user who wants a cost effective and expandable system or a software developer who requires the most responsive hardware to enhance your applications — you can't afford not to investigate the RDM Computer System.

Post coupon to RDM COMPUTERS

Please send more information on the

Name .... Phone ....

Address ....

Type of business ....

☐ Own use ☐ OEM dealership ☐ Commercial system.

RDM
Computers Pty. Ltd.

225 High Street Northcote 3070
Victoria Australia. Telephone: (03) 481 0077

Enter M027 on Enquiry Card

If you're searching for the ideal micro here's the formula:

S-100 + 2(1.6Mb) + 12.5kg

+ 6MHz Z80B + 128K RAM < \$4990

If you're like us, you've pulled your hair and asked, "Why don't they build the *ideal* microcomputer?!"

We're a small group of engineers supplying turn-key micro systems for dentists, universities, engineers, etc. We've been frustrated by the inadequacies of the machines we've had to work with.

Either their disk capacity is too small or they can't be networked. Their processors are too slow or they're built with poor quality components.

Anything that's even close to being a really good machine costs an arm and a leg.

We made up a wish-list — the features of the *ideal* machine:

S-100 bus

We decided an S-100 bus would be essential. It allows almost unlimited expansion. It would have to have two serial and one parallel port to start off with and be able to support up to three work stations if needed. It would need to allow later expansion to support up to 16.

It would have to let us add a 16-bit board and even a 32-bit board for really massive number crunching.

The other reason we'd want an S-100 bus is that it means the machine could be serviced quickly and cheaply by people without specialist training on it.

2(1.6Mb) floppy disk capacity

A total of 3.2 Mbytes on 5¼ inch floppies? It's a mind-boggling thought but the technology is here now. These new drives give this capacity with greater precision and reliability than drives with one-tenth the storage.

For people who want even greater capacity, the *ideal* machine would also need a hard disk option which could replace one floppy drive. It should be able to take 5, 10 or 20Mb hard disks with a 5 Mb removable cartridge option.

12.5kg for portability

The professionals and executives we've supplied over the years don't want to be desk-bound. They want to take *all* their data out on the job, interstate, overseas — or home at night.

So it has to be small, light and rugged. But *not* with one of those pokey little screens that most portables have. The screen would need to be nine inches with 640 x 200 resolution and 25 lines x 80 characters. A video option should be available giving 512 x 480 resolution for graphics and CAD (with a light pen). And, of course, a colour option.

6MHz Z80B processor

The *ideal* machine would have to have the fastest 8-bit processor that could handle the largest library of software. Obviously, the Z80B. Nothing comes near it for speed in this category.

128K RAM

Running under CP/M™ 3.0, we'd want it to have automatic switching between banks of 64K to allow big programs, RAM disks, and so on. That would have to come as standard. It would also need to be capable of expanding up to a total of 1 Mbyte of RAM — cheaply.

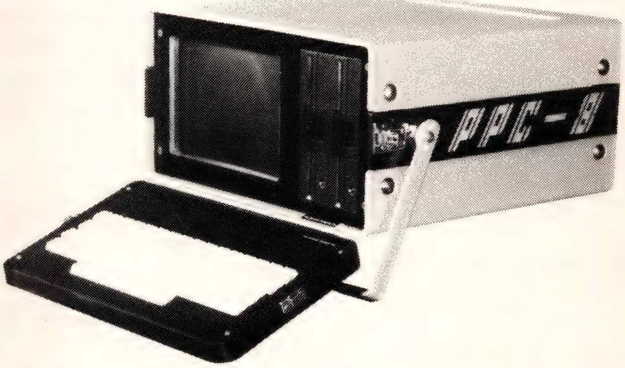
They're the sort of features that can keep you awake at night just *thinking* about them.

We decided to sit down and work out how much it would cost to build — in real life.

Astounding! We found that, provided we avoided the costs of marketing it to the general public, we could built it in Australia and sell it for $4985.

And that includes a great swag of software: Spellbinder™ for word processing, SuperCalc™ for spreadsheets, Ledger/Z™ for accounting, Basic/Z™, V-spool™ and Directory Sort™. And your choice of operating system: CP/M™ 2.2, 3.0, MP/M™, Turbo-DOS™ or, with 16-bit option, CP/M-86™ or MS DOS™.

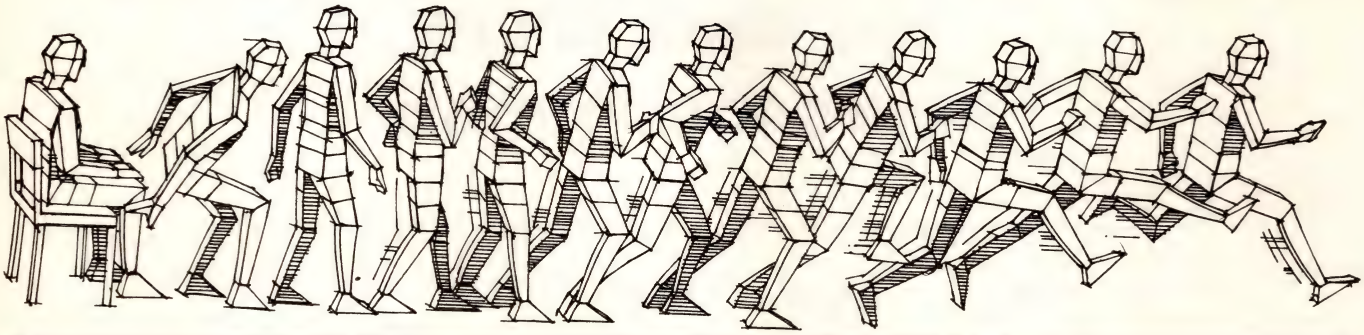
It sounds too good to be true — but the PPC-8 is a reality.



To get your hands on a PPC-8, ring us at the Portable Computer Co. on (02) 661 4877.

Enter M036 on Enquiry Card

Wanted: American heroes to confront the 40 samurai



Battle of the experts

By Tom Shea

ED FEIGENBAUM is looking for a whole new breed of American heroes who will shake up the fat, complacent American computer industry, launch a mighty US supercomputer research effort and meet what he says is the Japanese threat to America's slim lead in computer technology.

That's a tall order for someone who knows more about academic research than business or national politics. Feigenbaum believes, however, that America must respond now to the Japanese government-backed supercomputer research project or face being a mere colony of the Asian superpower.

Feigenbaum, a tweedy, pipe-smoking professor of computer science at Stanford University, in Palo Alto, California, is on the lecture, press-conference and talk-show circuit these days, stumping the provinces in support of sales for his new book, *The Fifth Generation: Artificial Intelligence and Japan's Computer Challenge to the World.*

He and Pamela McCorduck wrote the book, which both praises and views with alarm Japan's giant, co-operative 10-year research project. This project, backed by both government and industry, is intended to produce a supercomputer by 1990, as well as several revolutionary spin-offs along the way.

In his academic and persuasive way, Feigenbaum is is himself something of an American hero. His credentials as an artificial-intelligence (AI) researcher are impressive, and his purpose in promoting the book seems to go beyond boosting sales.

In 1965, research conducted at Stanford by Feigenbaum and others resulted in a breakthrough in AI research. "We discovered that computer programs that reasoned did well then they were given a lot of information about the world," he said.

Doctors undergo long periods of schooling, internship and residency, in which they collect more and more information about their field until at some point they become experts.

Computer programs that can do any credible intellectual work must also operate with and from a large base of knowledge about a particular field. That discovery changed the whole direction of AI research from a search for theories of logic and reasoning to so-called knowledge-based systems that could equal or surpass human reasoning in a given field.

Knowledge-based systems, also known as expert systems, are now serving as intelligent assistants to humans in many fields: bacteriology, oil exploration, computer configuration, internal medicine and chemotherapy.

But the Japanese want to advance the whole of computer science — software and hardware — to a new level of sophistication that can now only be imagined. Their record with cars and consumer electronics tells us we should take them very seriously, Feigenbaum and McCorduck contend.

Seen in that perspective, any major new initiative by Japan to advance computer design in knowledge-based systems could give that country an advantage in information science that would leave the divided and fiercely competitive US computer industry in the dust.

Not only would the Japanese have better hardware and software, but the amount of quality of expertise flowing into Japan could give it crucial advantages in almost every area of human endeavor.

"Knowledge is power," the old saying goes. Certain kinds of knowledge enable people to work more economically and with more expertise than their competitors.

"Knowledge itself is the new wealth of nations," Feigenbaum said at a recent press conference. "It's going to be sold as a commodity. We have seen the decline of manufacturing industries. Now, high technology is the greatest source of wealth.

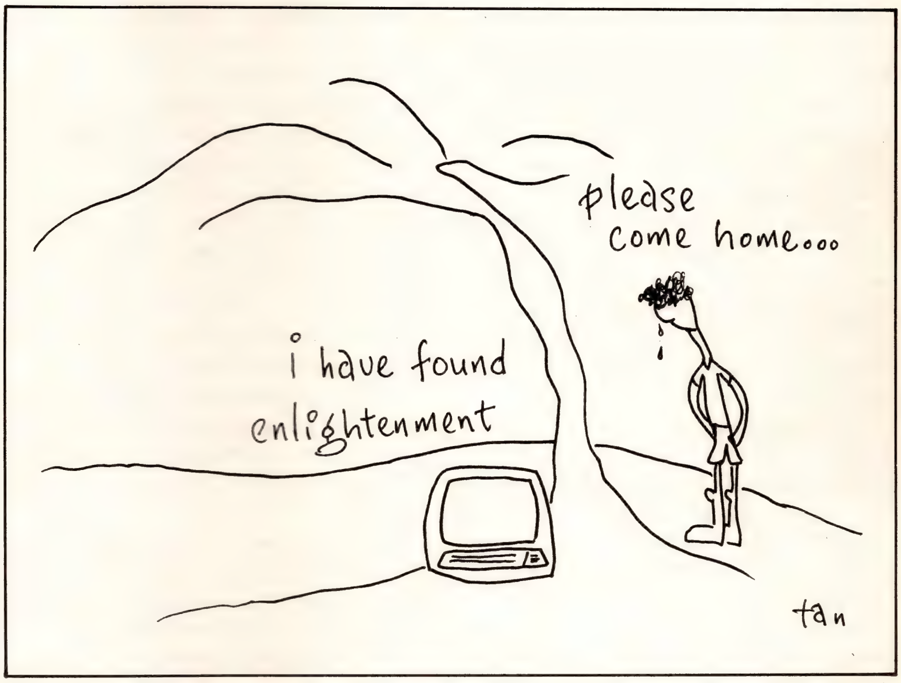
"The computer industry arose from nothing in the 50s, and now it's the single most important industry in the world. Computers and information processing are going to be America's greatest industry."

Rosy future

The only thing that could mar that rosy future is complacency, Feigenbaum warned. "We had cars, then we became complacent, and all of a sudden, the auto industry is in trouble.

Feigenbaum sarcastically suggested that, since the US is good at produc-

• *Tom Shea is a staff writer with InfoWorld.*



ing food, maybe the country should concentrate on that and resign itself to becoming a Japanese colony, providing raw materials to more advanced countries who would add value and resell the merchandise.

"We can't sacrifice another industry," he warned. "The national interest demands that we don't sacrifice the computer industry. Do we want to be come another Britain?" he asked. apologising to a British journalist from Reuters who was present at the press conference.

Three things characterise an expert system: lots of specific data, heuristics and an ability to explain itself.

Mycin, one of the first expert systems, contains a huge database of information about meningitis and infections. It knows the signs and symptoms of a vast number of bacterial infections — even rare ones a human expert might overlook. It knows the expected course of diseases and what antibiotics can combat which diseases — even what side effects to expect from certain drugs.

Heuristics are rules of thumb that human experts use to reason their way to good conclusions. Doctors pick up rules of thumb during their internships and after treating many patients.

This is knowledge that goes beyond what can be picked up in textbooks; often the expert himself is unconscious of the heuristics he uses. An expert may be tops in his field and yet be fuzzy about how he reaches conclusions.

Knowledge engineers work with experts to discover what heuristics the expert employs in actually doing his work. Then the engineer expresses the rules in computer software.

These crude first attempts to reason are then brought back to the expert, who refines them and qualifies them, sometimes discovering new rules of thumb in the process.

The changes are coded up into software. The process is repeated many times until the computer program closely mimics the behavior of the expert who "taught it everything it knows".

Trusted assistant

Expert computer systems act as intelligent assistants to doctors and other professionals. In order to become a *trusted* assistant, however, the computer needs to explain itself. It must make its reasoning transparent to the human, so that the human can see if he agrees with the line of reasoning taken.

Accordingly, expert systems are interactive. They let humans ask such questions as, "Why are you asking me that question?" and "Why did you eliminate that possibility?"

The Fifth Generation mentions several expert systems now in use, among them:

Prospector is an expert system developed for the US Geological Survey by SRI in Menlo Park, California. It assists field geologists in discovering minerals. Prospector costs several hundred thousand dollars, but owners can get their money back many fold in a short time if it discovers just one deposit of oil or other precious mineral that a human might have overlooked or spent many years looking for.

Digital Equipment Corporation (DEC) uses an expert system to configure its VAX computers.

Other expert systems are in development.

Feigenbaum dismisses the danger of computers making final decisions in these areas, though. "Users will never turn over responsibility to a computer," he said. "A doctor always signs the bottom line. There's always a doctor in the middle."

The expert systems now in use run on million-dollar mainframes; the software was extensive, costly. Yet the computerised "home expert" was coming, he said.

To be "smart", home computers needed more memory and greater speeds than are now available, although Feigenbaum said computers based on the 16-bit Motorola 68000 microprocessor were adequate for knowledge-based systems if they had a lot of memory. And memory prices kept coming down.

"It's mostly a question of memory and a little bit of processing speed," Feigenbaum said. Half a megabyte of RAM would do it.

What kind of AI expert do you need around the home?

Garden diagnosis

A garden diagnosis and therapy system is one the professor would like to see. His wife has a kind of expertise, commonly called a green thumb. She always knows what kind of plant needs what kind of care and what to do when the leaves turn brown around the edges, according to Feigenbaum.

An expert system that embodied her knowledge could provide individual guidance in plant care similar to the advice given on a TV gardening program.

A well-informed expert system could provide welcome advice about the smartest way to invest money. Modern man is confronted by many investment opportunities and various schemes with different interest rates, degrees of risk, tax liabilities and so forth.

Other outfits that create expert systems for commercial use include Applied Expert Systems in Cambridge, Massachusetts; Computer Thought Corp in Richardson, Texas; and divisions of larger companies such as

TRW and Lockheed. In addition, research on expert systems is being done on many university campuses.

So far, Fortune 500 companies are the customers for such systems — expert systems are too expensive for smaller companies.

Expert systems were first developed in the US. Now several organisations, including the ones mentioned above, are developing new ones. Why then do Feigenbaum and cowriter McCorduck view the Japanese effort with such alarm?

The Japanese had been paying attention all along to research in AI, Feigenbaum said. In the late 70s, there was an explosion of interest in that country that generated a unified assault on the frontiers of computer research.

In the Japanese view, individual breakthroughs in computer hardware, computer software, linguistics, artificial intelligence and other fields were related to each other synergistically.

The Japanese Fifth Generation Computer project shone a spotlight on computer advances and their importance in the world community. Suddenly, people took a great deal of notice of what had been considered a computer-science breakthrough with no application outside that realm.

Eight companies are contributing the time of their best researchers to the project. Every few weeks, the researchers — know as the 40 samurai — go back and share the findings and insights with their home companies.

At certain specified times during the 10-year research period, participating companies can release products that embody the findings of the on-going research.

The Japanese are completely open about the project, Feigenbaum said. They are publishing research papers in English that stem from their work.

"The Japanese challenge is very, very beautifully put together," Feigenbaum insisted. "You have to go over and see it and talk to the people involved to really appreciate it."

In the US, by contrast, there is no pre-competitive phase during which companies working in the same areas can pool their efforts and work co-operatively. It seems to go against the national character of fierce individualism and competition. Anti-trust regulations reinforce the stand against such co-operation.

There have been a few exceptions, usually in times of war. And NASA was formed to put a man on the moon. That co-operative, government-sponsored effort resulted in a technological boom that fuelled the US lead in electronics that continues to this day.

Why has the US not responded to the Japanese challenge?

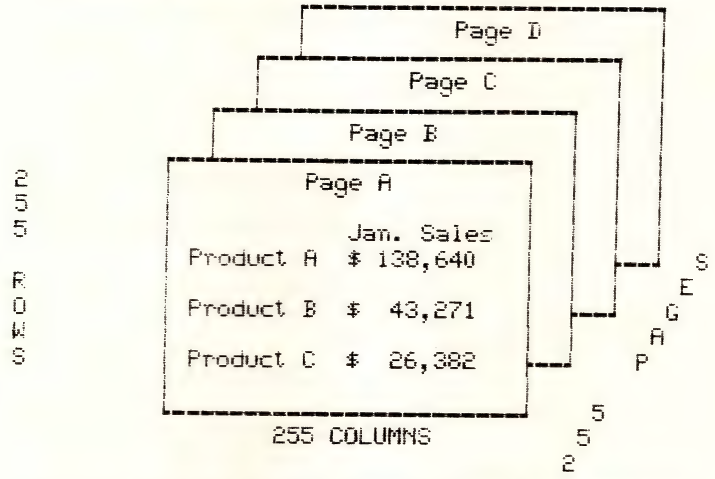
"The Number One problem is the lack of a national will to do this," Feigenbaum answered, "It's a failure of vision on the part of industry leaders."

As a country, the United States "has an antipathy to looking ahead," Feigenbaum contended. "As a people, we don't like to have a plan. It smacks of telling us what to do." ☐

WHEN ROWS AND COLUMNS AREN'T ENOUGH

Radaro Computer Devices Present:

REPORT MANAGER from DATAMENSIONS for The **DOT**



THE ONLY **PROGRAMMABLE, 3D** SPREADSHEET CALCULATOR

REPORT MANAGER and THE **DOT** brings you the third dimension — PAGES — to Report preparation. It allows you to put distinct pages into memory at one time, as if they were stacked one behind the other. All program commands, functions and formulas are active throughout all pages.

NO MEMORY PROBLEMS:
Report Manager and the **DOT** give you up to 640K of RAM Memory to work your problem out. No more running out of memory.

USER FRIENDLY:
Report Manager includes it's own programming language, EXEC., Files built under EXEC can load automatically when the **DOT** is turned on and then prompt users for Data entry. Report Manager has 255 rows, 255 columns and 255 pages, 200 + Graphics characters and 57 preprogrammed functions. For complete details on what the **DOT** with **REPORT MANAGER** can do for your business, CONTACT:

EXCLUSIVE DISTRIBUTORS: **RADARO COMPUTER DEVICES,**
316 Queen Street, Melbourne 3000.
Telephone (03) 67 6638.

Enter M049 on Enquiry Card

Delicate thought processes

Research into fifth-generation systems could be shaping up into the ultimate battle between the Luddites and high technology, as John Markoff of InfoWorld suggests.

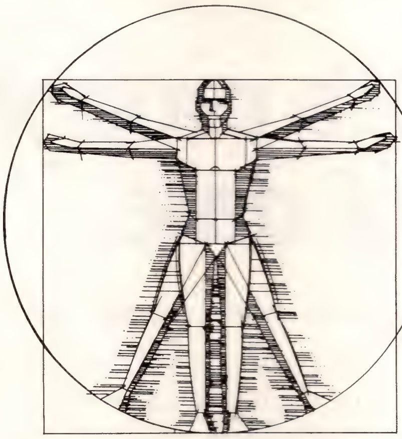
AN AMUSING story is making the rounds at artificial-intelligence conferences these days. It seems that one of the better-known Silicon Valley artificial-inteligence corporations received a contract from an East Coast minicomputer manufacturer to create an expert system to aid in the design of its computer-system architecture.

Expert-system software constitutes one of the first commercially viable uses for the academic artificial-intelligence research of the past two decades.

Expert-system planners approached the very-large-scale-integration (VLSI) circuit designers at the minicomputer company and asked them for their "expertise" on chip design.

To the planners' surprise, the engineers refused to have anything to do with the project. The engineers, however, realised all too well the consequences of creating expert systems in their own field.

This mini-rebellion vividly underscores what is at stake both economically and socially for some of the first intellectual or white-collar occupations to feel the pinch of automation.



The development of the computer has been divided by analysts into five generations. The first four generations have already taken place. The first generation was based on vacuum tubes, the second on transistors, the third on integrated circuits and the fourth on VLSI circuitry.

The fifth generation is now on the horizon. Industry experts claim that this generation will be based on a new synergy of hardware and software. New architectural models will break with sequentially processing von Neumann computers. Software techniques will for the first time permit systems to emulate human thought.

In the 60s, the Department of Defence, through its Advanced Research Projects Agency, funded the development of some of the most creative computer-science research. The research was creative because it was largely experimental and unstructured.

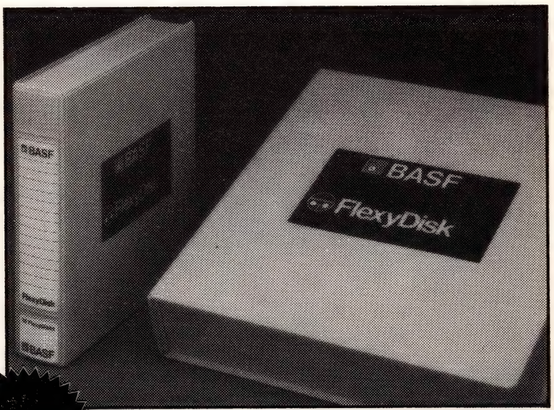
Now the Pentagon is prepared to invest over $US500 million on computer research over the next seven years. This time, however, the military has specific goals in mind.

Recently, *Aviation Week & Space Technology* reported that Richard DeLauer, Under-Secretary of Defence for Research and Engineering, had stated that the military was interested in funding the development of an "nth generation" computer that would have military applications including:

- Computerised weapon systems able to see, reason and plan as well as control action.
- Military assessment systems that are able to see, listen, understand, interpret and represent information.
- Autonomous systems able to take instructions, navigate and carry out a military mission.

Like the Pentagon, the Japanese have clearly spelled out their goals for the next generation of computers. In the Japanese case, they are social and economic goals.

Last year the Japanese Ministry of International Trade and Industry began work on a project to develop, by the end of the decade, a machine capable of performing 10 billion operations a second. Such a machine would be 100 times faster than the American Cray I supercomputer. □



BASF

Introducing a totally new level of excellence in magnetic media — the "qualimetric" standard. The "qualimetric" standard is maintained without compromise through every step of BASF design, production, inspection, and testing . . . reflecting an unwavering BASF commitment to media fidelity and durability.

qualimetric ®
For information security, tomorrow and beyond, look for the distinctive BASF package with the "qualimetric" seal.

SEND YOUR ORDER AND CHEQUE TO:

PERIMEDIA PTY LTD
357 Nicholson Street,
Carlton North 3054.
Phone (03) 347 7416.

Introductory Offer

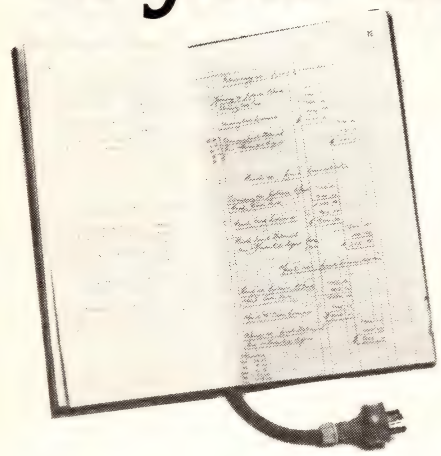
Box of 10 FlexyDisks 5.25in, single side, in de luxe library case for **$38.50**

Comprehensive range in diskettes and computer tapes.

Free delivery anywhere in Australia

Enter M052 on Enquiry Card

If your cash book hasn't got a 3 point plug.



It's probably out of date.

Tired of the tedious task of Cash Book Writing ? ? ?

. . . Then do it quicker and cheaper Electronically . . . use

Electronic Cash Book

THE ELECTRONIC CASH BOOK IS DESIGNED FOR THE SMALL BUSINESS AND ALLOWS THE OFFICE MANAGER TO ACCURATELY MONITOR ALL ASPECTS OF CASH MANAGEMENT

AVAILABLE FOR:

- * COMMODORE 64
- * COMMODORE 4000
- * COMMODORE 8000

The Commodore 8000 version can also be supplied with a comprehensive General Ledger.

THE ELECTRONIC CASH BOOK is menu driven and offers 9 main menu options:

- — *Setup/modify Dissection Codes*
- — *Setup/modify Periodical Payments*
- — *Enter/modify Transactions*
- — *Bank Balance/Cheque Inquiries*
- — *Reconciliation*
- — *Reports/Summaries*
- — *Disk Handling*
- — *Budget/Dissection Entries*
- — *Reference Entries*

FOR USE IN BUSINESS OR HOME
Prices start from $195.00

FOR FURTHER DETAILS CONTACT:

PITTWATER COMPUTERS
PHONE: (02) 939 6760
OR YOUR LOCAL COMMODORE DEALER

Enter M026 on Enquiry Card

AB Office Electronics

385 Sydney Rd. Balgowlah N.S.W. 2093
Telephone 949 7195

MicroSpooler™

Imagine being able to use your computer seconds after beginning an extensive printout. Visualise your printout with page breaks, page numbering and titles, margins of your choice, indented carryover lines, on any size paper! Appreciate the time and money you will save by not waiting on your printer.

MicroSpooler, a buffered printer interface, maintains control over your printer while you go on using your computer for more productive activities. Eliminate waiting while your printer pecks through a long document. MicroSpooler accepts information from your computer at up to 2500 characters per second and feeds it to your printer as fast as it can handle it — without using any of your computers memory or time!

As soon as MicroSpooler has stored your document in its buffer, control of your computer is returned to you.

Features include:

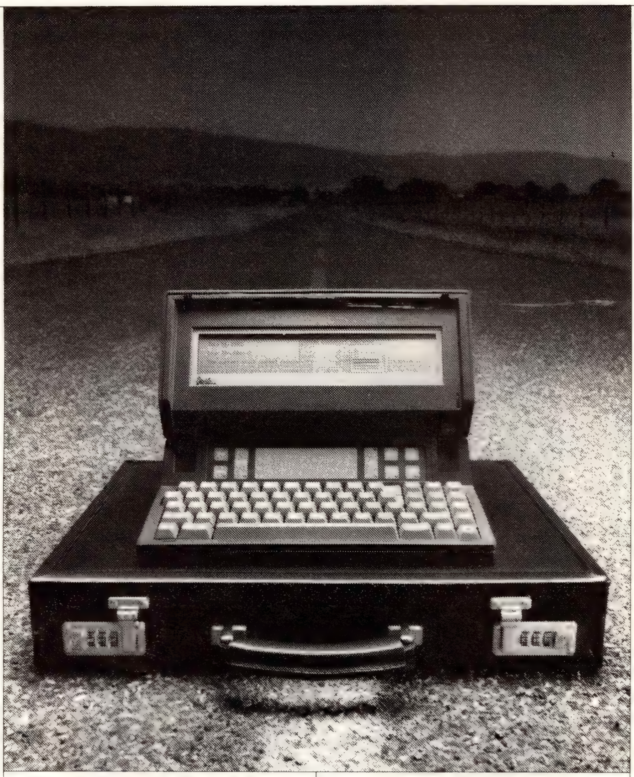
- *Status Readout — The front panel digital readout continuously updates itself to display either the amount of memory in use (in kilobytes) of the number of copies selected.*
- *Multiple Copy Function — For running up to 99 duplicate copies of the data in the buffer.*
- *Pause Function — Temporarily halts data output to the printer to allow paper adjustments, etc.*
- *Internal Power Supply — Allows MicroSpooler to operate Independently of either computer or printer.*
- *Self Testing — Performs a comprehensive check of most internal functions and memory. Indicates defective IC's in the unlikely event of a failure.*
- *Front Panel Reset — Empties the buffer of unwanted data.*
- *16K Memory — Factory expandable to 32 or 64K.*
- *Independently Selectable Baud Rates and handshaking on the serial models' ports.*

Dealer enquiries welcome

Enter M011 on Enquiry Card

THE FIRST MOBILE COMPUTER.

THE COMPLETE COMPUTER FOR THE MOBILE PROFESSIONAL.



Professionals on the move in today's productivity-paced business environment have to run a little faster just to keep up.

They can easily spend half their time in airports, taxis, lobbies and hotels unable to do the work they'd like to get done.

But we have a solution.

Give them the powerful 9 pound, 16-bit computer that works when and where they do.

Give them an advanced battery-powered printer that attaches securely on the computer.

Give them an interactive human interface and operating environment that takes only 15-30 minutes to learn.

And unique field-oriented software that comes in rugged plug-in capsules.

In short, give them the Gavilan™ mobile computer.

PORTABLE TURNED PRACTICAL.

Never has there been a complete business computer system as sophisticated, yet as lightweight, as the Gavilan.

Self-contained, rechargeable 8-hour batteries free the user from external power constraints.

The 8 line X 80 character screen eliminates the need for an external monitor, although you can add one if you wish.

The full-size typewriter keyboard makes data entry as convenient as it is in desktop systems.

A built-in 3½" microfloppy disk drive and modem provide the capabilities of data handling and transmission where they never before existed.

And a 50 character per second printer gives the mobile professional in the field the immediacy of hard copy text, forms, charts, spreadsheets and graphics.

All in a compact 14 pound mobile office.

WE BUILT A MORE MOBILE MOUSE.

The success of any computer depends in part on the "friendliness" and accessibility of the user interface.

Especially in the field.

A standard mouse interface is fine for the expanse of a desktop, but not for work on the move.

So with the Gavilan, we incorporated a built-in touch panel: the first fully integrated computer mouse.

It's a pressure-sensitive pad just above the keyboard. Finger movements across the touch panel control the on-screen movements of a cursor.

But like a mouse, the Gavilan touch panel actually executes virtually all of the user commands, saving the keyboard for typing only.

Through the touch panel, users store and retrieve data. Cut and paste. Move documents. Scroll through pages of information. Zoom out for a complete look at the format of a document. Or even ask the computer what just happened and what to do next. With one finger.

SOFTWARE IN A CAPSULE.

The intuitive ease of talking to the computer through the touch panel is made possible by the unique Gavilan operating environment and software packages.

The applications packages come in durable capsules called CapsuleWare.™ They plug directly into the body of the computer, adding no additional volume. The operating software, (GO System™) then lets each of the applications communicate with each other through a common interface and a sharing of data.

The result is a completely integrated information environment that lets the user combine spreadsheets, graphics and word processing text together.

All in the same uninterrupted user mode.

OUTWARD MOBILITY FOR USERS, UPWARD MOBILITY FOR OEMs.

The Gavilan mobile computer and its CapsuleWare programs are creating vertical market demands—both in MS/DOS and the Gavilan operating environment—for software packages completely unrealized one short year ago.

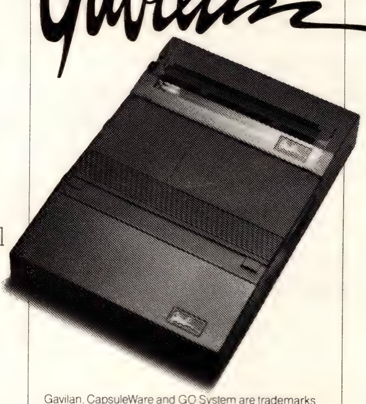
That means new opportunities in applications development far beyond the typical office-bound programs. From air and sea navigation to banking services. Journalism to field auditing. Anthropology to insurance.

And that means you've got the chance to be first in your chosen field.

A position we strongly advocate.

Gavilan Computer Corp.
P.O. Box 5004
Campbell, CA USA 95008
(408) 379-8000
Telex 4991278 GVLN US

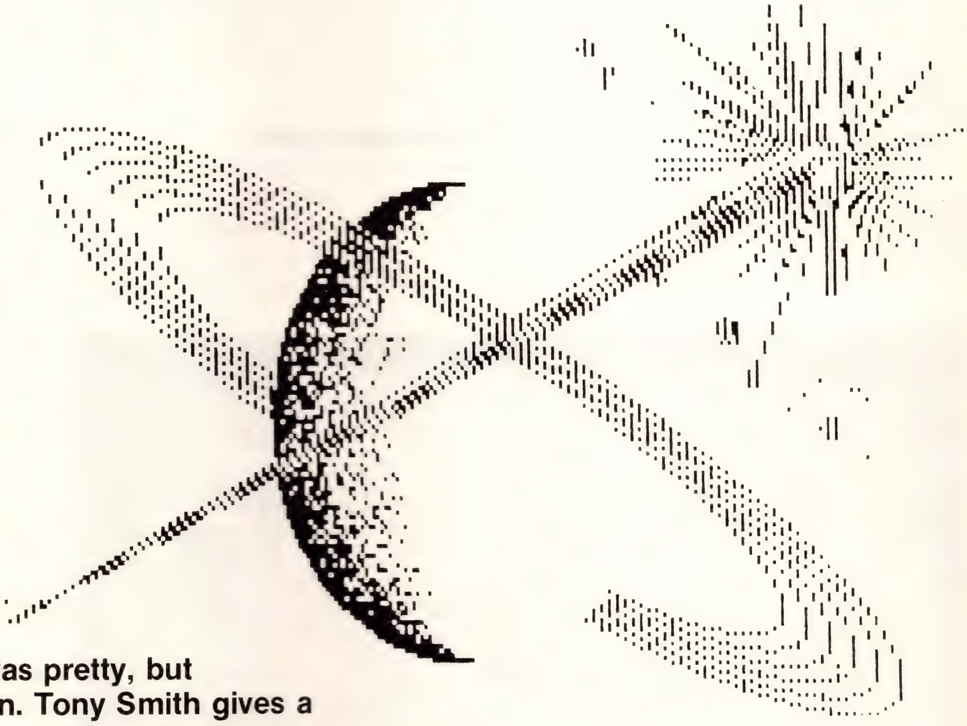
Gavilan



Gavilan, CapsuleWare and GO System are trademarks of Gavilan Computer Corporation. MS/DOS is a trademark of Microsoft Corporation.

Contact Electronic Concepts, 55-57 Wentworth Avenue, Sydney NSW 2000, Australia.
Telephone: 212 2833. Telex: 24657.

Enter M014 on Enquiry Card



If you thought graphics was pretty, but non-functional, think again. Tony Smith gives a background to graphics developments, and points to the future.

The graphics maze

GRAPHICS delights people. Of all the brilliant things that computers can do, nothing draws the crowds like a good, but otherwise non-functional, graphics demonstration package.

The fact that graphics can be a very useful took often is overlooked. The graphics available on microcomputers cover a wide range of approaches from the simple block mode characters of Tandy's Model III to the bit-mapped windows of Apple's Lisa, and color as well.

As well as systems including graphics capabilities, there are an increasing number of specialised graphics systems which plug into or onto micros, especially in the high performance area. Other graphics devices include input (digitisers), output (plotters), specialised chips and software.

The pioneers of block-mode graphics still survive in the market today. Tandy's TRS-80 Model III is a compatible reworked version of its Model I which defined a set of 64 monochrome block mode character cells based on all the possible on/off values for six blocks defined within a character cell, two horizontal by three vertical.

The popularity of Models I and III has produced vast quantities of ingenious games software stretching the limits of block mode graphics. Intelligent Systems Corp went two steps better with its Intecolor range of micros and intelligent terminals featuring eight blocks a character cell on a screen up to 80 characters by 48 lines, each with a choice of eight foreground and background colors.

While the Intecolor micro was one of the many swamped by the de facto standardisation on CP/M for Z80-based machines, ISC's persistence with its product line is underscored by its recent purchase of a substantial interest in its well-known Australian distributor Anderson Digital Equipment.

More than games

The next direction of graphics has led to the first major market successes of microcomputers. Relatively low-resolution, bit-mapped color screens have become the driving force in the booming home computer market as they turn the television into a sophisticated games machine.

The ubiquitous Apple II's so-called hires graphics was the precursor and is still a major factor in that market. Apple's use of two switchable bit maps and two sets of six simultaneous colors sets it apart from all bar its look-alikes.

The duplicate bit map is still a powerful advantage which only now games designers are starting to take full advantage of, but the Apple's color system remains a proprietary anachronism. Atari was the first to improve on Apple's efforts, with a VLSI graphics chip, but, despite its expertise in television games and the huge body of software developed for it, Atari's color graphics capability was not enough to impede Apple's progress.

To survive in the computer market it has been forced to compete with the mass-produced Commodore's and, internationally, with education-oriented system such as the UK's BBC, Australia's Microbee and New Zealand's Progeni's Poly. Later entrants into that market have come from Tandy, UK offerings led by Sinclair's Spectrum and an emerging contingent from Japan and South-East Asia.

A continuing problem has been the difficulty users have had trying to use the power of the VLSI graphics chips inside these microcomputers. Manufacturers have not been interested in providing high-level support for graphics programming which has remained an area of arcane knowledge traded between initiates.

For its own sake

Well away from the birth of microcomputers, specialised computer graphics has developed in its own way. Several companies using mainly minicomputer technology have developed specialised graphics systems, especially for computer-aided design and manufacture (CAD/CAM) applications.

In that world, Tektronic has become as big a name as IBM is in mainframe computers. And just to keep the emerging suppliers of microcomputer graphics systems on their toes, Tektronic soon will bring out its own personal computer.

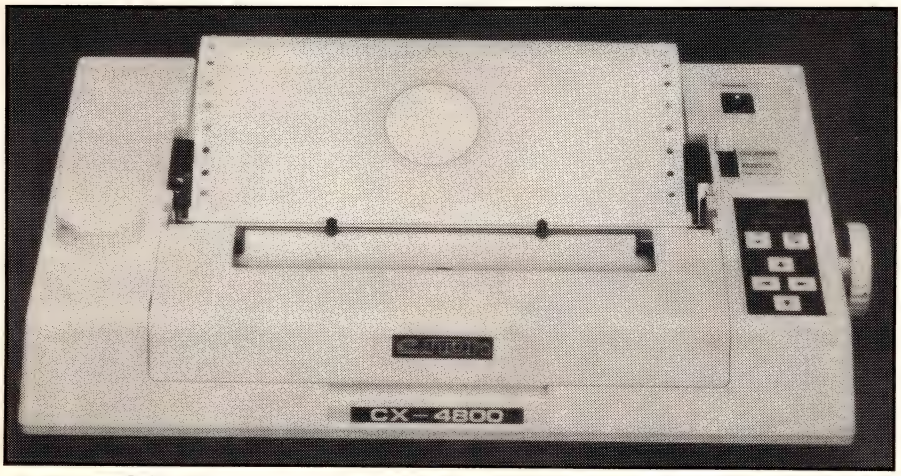
Two distinct approaches have emerged for the provision of sophisticated graphics facilities on microcomputer systems. Several suppliers have opted to provide high-powered graphics as an adjunct to existing computers, while a rising number are dedicating complete personal computers to graphics. Add-on high-powered graphics facilities either can be plugged into a computer's own bus, such as Cromemco's SDI and Microprism's GDC-512/CMC-512, or as separate units, such as Ramtek and Vectrix, which interface to various micros.

The Xerox Palo Alto Research Centre's pioneering work with Smalltalk guaranteed that it would be a leader in the personal computer market, with an icon-based human interface. Xerox's first offering the Alto, followed by the Star workstation built on the additional plank of PARC's other notable development, Ethernet.

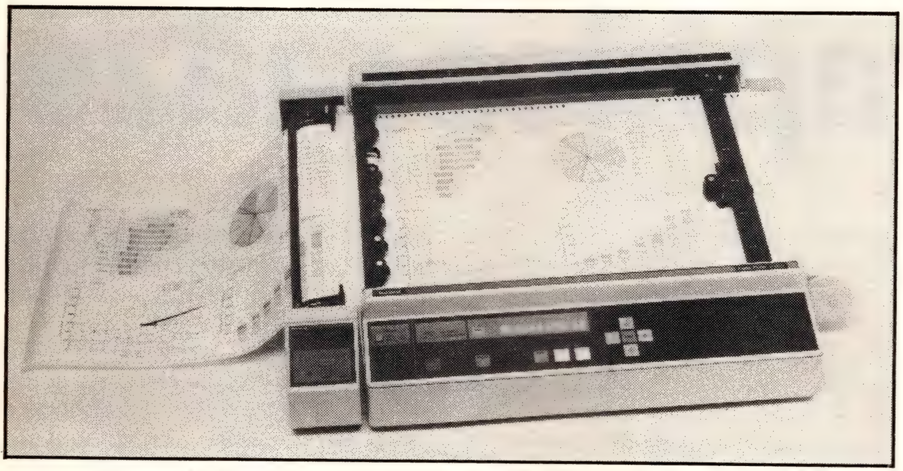
Several small companies have pioneered the top end of this market segment: Sun Microsystems with its SUN-1 and Three Rivers with Perqu, represented in Australia by ICL. Close contact with Apple may have been an important factor in network supplier Corvus Systems producing the most economical high-resolution bit-mapped system on the market as its first personal computer, Concept.

But none of these had achieved more than marginal visibility before Apple unveiled Lisa and effectively defined the market by virtue of its brilliant promotional campaign. Meanwhile, just to show how to do things properly, Silicon Valley pioneer Hewlett-Packard put together what for the time being must remain the ultimate graphics personal computer, its HP-9000.

As the first implementation of HP's powerful five-member VLSI chip set, including the most powerful microprocessor in the world with 640,000 components on a chip, the 9000 has been positioned as an up-market engineering and scientific workstation while the underlying technology is brought down into a more widely useful price bracket.



C-Itoh's printer/plotter uses a four-pen head mounted on a dot matrix mechanism.



National's A-3 plotter features 8 different colors.

Summagraphics optical Summamouse.

And in between

An increasing number of business micros entering the market feature medium resolutions graphics, which they, like Apple before them, insist on referring to as high-resolution — a claim which must horrify the builders of dedicated graphics systems. The number now in that market almost defies counting, so this summary will try only to individualise those which have set a trend somehow.

Even if it was a year late, the almost forgotten Apple III, at one stage the fifth highest selling computer by volume, was just about the first business micro to make serious use of graphics. For a long time, nobody bothered to do anything smarter than block mode graphics with Z80 processor-based systems, until North Star produced its then second micro, Advantage.

Hewlett-Packard maintained graphics as an integral part of its product line, with its HP-86A at the micro end. It was not until the advent of (at least pseudo-) 16-bit processors made large chunks of memory easily addressible that most computer manufacturers bothered to do anything serious about graphics.

With its Personal Computer, IBM effectively defined the minimum monochrome graphics resolution as 200 lines of 640 pixels. The rest swarmed to be compatible, some even to improve.

Japanese and UK would-be compatibles were more impressed by the IBM-Matshusta jointly designed 5550, the "Japanese PC", which provides double the number of lines, important for the local script. Around Boston, the need for more spreadsheet columns on the screen led to 132-char lines and, consequently, greater horizontal graphics resolution for Digital Equipment Corp's range and Computer Devices' DOT.

Meanwhile, several early "personal computers with graphics" built up substantial followings from original equipment manufacturers wishing to use them as vehicles for software making moderate use of graphics. In the Australian market, two clear winners were Victor Technologies' Sirius 1, with its quite impressive monochrome resolution, and Nippon Electric Co's Advanced Personal Computer (NEC APC).

One of the first multi-user micros to dedicate itself to graphics output in preference to standard ASCII terminals, has been Wicat, with its own moderate-resolution terminal designed particularly for educational applications.

(Left): *Cromemco's slidemaster color graphics system uses a graphics tablet.*

(Below): *Robocom's Bitstik is the most sophisticated graphics device available for the Apple II.*

Attachments

Reasonable quality plotters come mainly from traditional suppliers of such equipment to the computer industry. A clear leader is Hewlett-Packard which recently has released a quite fast A3 six-pen plotter in the $A2,500 range, forcing its bottom-line model well below $A2000.

Even the low-end offerings of some of the lesser-known plotter manufacturers cost enough to be a serious obstacle in the normal personal computer price range, although clever engineers have developed a range of single-pen plotters that retail for less than $A1000. The Strobe drum plotter and the Sweet P are two examples available in Australia.

The development of low-cost color printer-plotters has given many home-computer users an opportunity to produce color graphics. The printer-plotters use dot matrix printer mechanism technology with a four-pen head and typically write onto a 4in-wide roll of paper.

Most home computer manufacturers offer one of these peripherals, and C-Itoch has released a version closer in size and performance to an 8in dot matrix printer. The graphics capability of dot matrix printers has improved dramatically in recent years.

Printer manufacturers either have developed printer heads with an increased pin density in an attempt to get better character definition or have improved the resolution of the printer stepping mechanism, so that high-resolution plotting is possible. Color printers have been slow to appear, with several dot matrix offering eight colors, using a three-color ribbon, at reasonable cost.

The promise of color inkjet printers has not yet been realised, and the technology is still priced out of the reach of most microcomputer users.

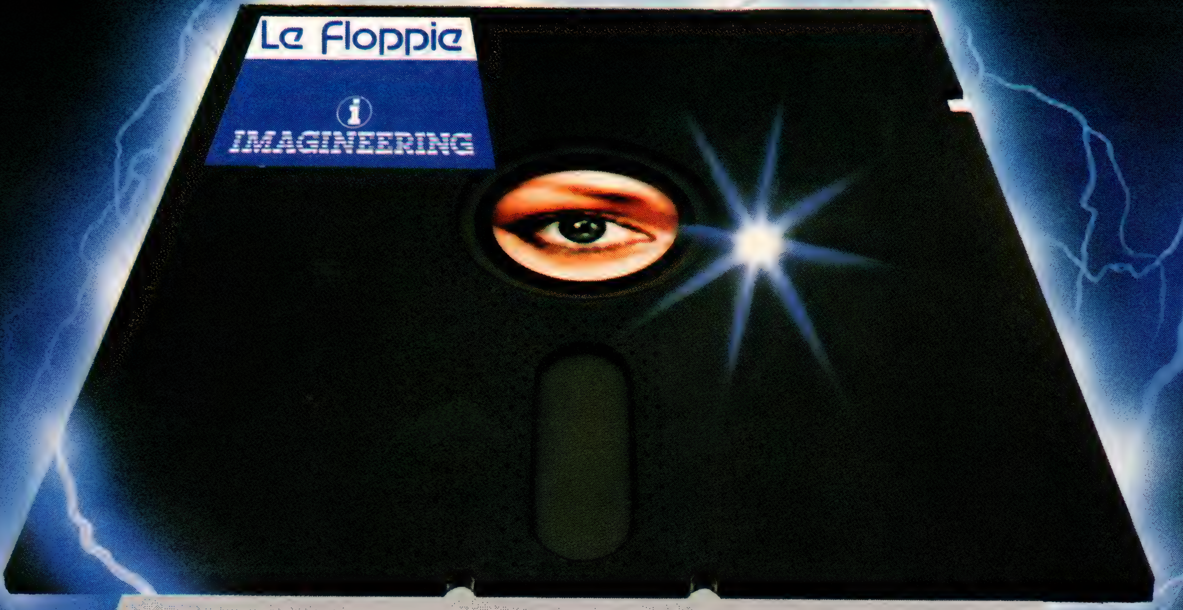
In the rapidly growing area of adding graphics capabilities to dot matrix printers, driving software is lagging badly behind the hardware capabilities. Just occassionally, that gap is overcome by the likes of Apple's Lisa software pushing the old Apple II printer to performance that had not been dreamt of, or Robocom's Bitstik interface.

The Summagraphics Bitpad has been the basis for most of the digitisers that are used with microcomputers.

(Continued on page 79)

From out of the future
your answer to information storage.

Le Floppie™



Le Floppie high-quality flexible diskettes have been designed to provide reliable, trouble free, fail-safe recording.

Le Floppie is your guarantee of optimum performance with 100% data reliability and retrievability time after time.

Le Floppie is compatible with all the popular microcomputers: IBM PC, Apple, Atari, Commodore 64, Osborne and many of the CP/M machines.

Le Floppie comes in two sizes 5¼" and 8". They come totally protected in 'Supa-Strong' jackets made doubly secure in rigid polyurethane boxes — what's more the whole package enjoys an added 12 months warranty advantage. Because we're out to impress you with all of **Le Floppie** benefits we're launching this product with some considerable price advantages (that's to your advantage).

Le Floppie saves your data, your time and your money.

Available at Myers and Grace Bros, Business Centre Stores, Computerland and City Personal Computers and all fine microcomputer outlets.

i
IMAGINEERING™
The Art of Software
579 Harris Street, Ultimo, NSW 2007. Phone (02) 212 1411

Enter M033 on Enquiry Card

CONTROL DATA Control Data Diskette manufactured in Australia for Imagineering

BERKELEY/IMG 001

The graphics maze

(Continued from page 77)

Apple's Graphics Tablet is the most widely used of these devices.

Recently, low-cost devices, like the Koala Touch Tablet, have been released that offer a low-resolution digitiser that matches the relatively low-resolution of home-computer screens.

Mice have become fashionable pointing devices and have generated vigorous argument among software and hardware engineers about the relative merits of mechanical and optical technologies and the ergonomics of the number of buttons on top of the mouse.

Mechanical mice are cheaper and can be used on any flat surface. Proponents of optical technology claim mechanical mice are subject to wear and cannot achieve the same standards of accuracy.

Three mice are available in Australia, with Microsoft's mechanical mouse and optical mice from Minicomp and Data Peripherals.

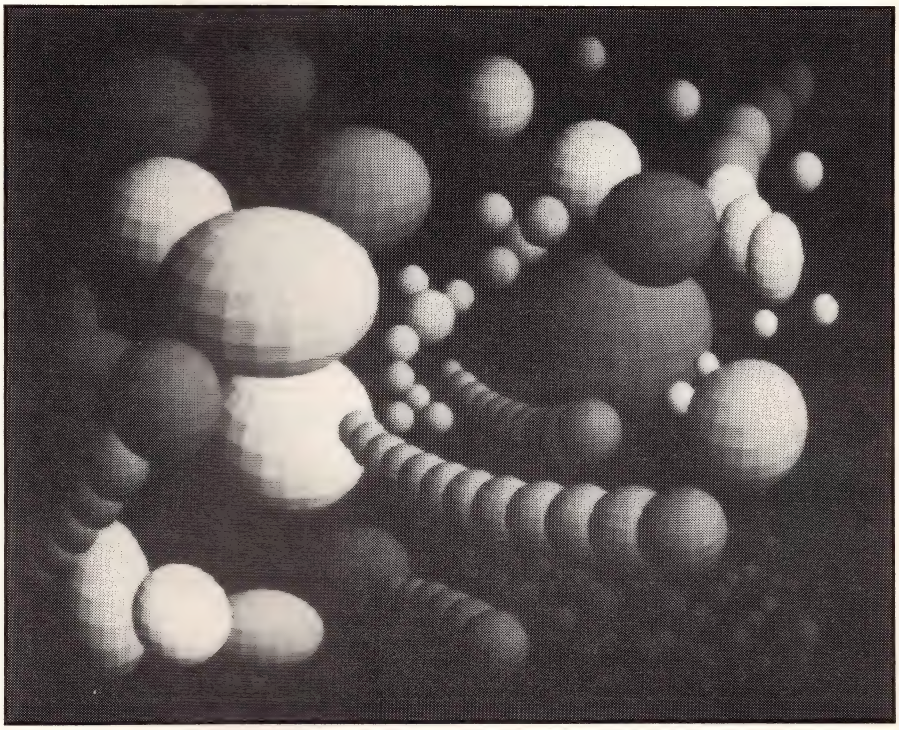
Touch screens and light pens have not had much success because of the cost of achieving adequate screen resolution.

Hewlett-Packard's new HP-150, featuring a touch screen with a 40 x 25 resolution, looks as though it will revive interest in touch screens, just as Apple's Lisa popularised the mouse. Handheld controllers come in a vast range of types and styles.

The earlier paddle controllers have been replaced by joysticks with greatly improved feel, durability, control and accuracy. Track balls are starting to appear and may become popular as low-cost pointing devices.

The lack of any real standards for communicating graphics images and resolving them in the orders needed for various devices seriously limits the utility of any driver software developed for plotters, especially the dot matrix variety. Only Hewlett-Packard's graphics manipulation language for its pen plotters provides any significant portability between devices.

But the advent of high-resolution laser printers, with complete plotting capabilities, for less than $A20,000, and their impending price crash into the micro market range provides an enormous incentive to solve the dot matrix graphing software problem.



Stunning grapics produced by the Vectrix graphics peripheral.

Internals

To date, graphics systems have been driven by much the same components as are used for general-purpose computing. Only the video signal drivers have been in any way special — and then largely derived from the television industry.

For the graphics systems of tomorrow, designers have several novel tools to use in the form of a pair of chips designed by Intel and Hitachi, especially to provide screen graphics, multiple windowing and appropriately flexible screen text manipulation. Intel calls the chips 82720 and 82730.

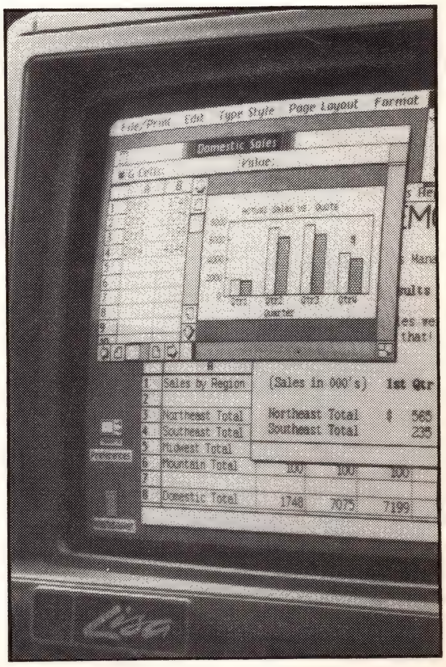
Both leading microcomputer software companies have developed graphics software. Microsoft has released Gee Whiz Basic as an extended version of MBasic to take advantage of the graphics of most 16-bit microcomputers.

Microsoft is also about to release a graphics driver, that will provide a standard interface for its MS-DOS operating system and programming languages with graphics devices. Digital Research was the first company to develop a standard graphics driver for its system software with GSX, which apepars to have gained acceptance from manufacturers of graphic devices and CP/M programmers.

Both drivers will become important components in the development of graphics software for microcomputers, particularly software that is applications orientated.

Many peripheral manufacturers have agreed to assist both Microsoft and Digital Research develop drivers for their products. This should solve many of the problems that programmers have had supporting printed and plotted ouput of graphic displays.

As the technology improves, prices drop and system software support becomes available, the graphics peripherals will dominate *the* microcomputer peripheral market. ☐



Microcomputer graphics capabilities

Make and Model	Display Device	B/W Resolution		Color Display	Colors[2]
		Horizontal	Vertical		
HOME EDUCATION					
Apple IIe	monitor	256	192	opt	6
Atari	TV	320	192	yes	16
BBC	TV	640	256	yes	16
Commodore VIC 20	TV	176	158	yes	8
Commodore 64	TV	320	200	yes	16
Progeni Poly	internal	480	204	yes	7
Sinclair Spectrum	TV	256	192	yes	8
Texas Instruments TI-99/4A	TV	256	152	yes	16
TRS-80 Model III	monitor	128	48	no	—
TRS-80 Color Computer	TV	256	192	yes	8
GENERAL BUSINESS					
Apple III	monitor	560	192	opt	16
Canon AS-100	internal	640	400	opt	8
Columbia PC1600-1	monitor	640	200	yes	4
Computer Devices DOT	internal	640	200	no	—
DEC Rainbow	internal	800	240	opt	8
Hewlett-Packard HP-86A	monitor	544	240	no	—
Hitachi MB6890	monitor	640	200	yes	8
Hyperion	internal	640	250	no	—
IBM Personal Computer	monitor	640	200	opt	4
ISC Intecolor	internal	160	192	yes	8
Labtam	internal	800	600	no	—
Mitsui Sord M23P	monitor	640	200	yes	8
NEC APC	internal	640	475	yes	8
North Star Advantage	internal	640	240	no	—
Oiivetti M20D	monitor	512	256	opt	4
Sanyo MBC 1250	internal	640	400	no	—
Sigma OKI if 800 Model 20	internal	640	200	yes	8
Sirius 1	monitor	800	400	no	—
TeleVideo Portable	internal	640	240	no	—
Torch	internal	640	256	yes	16
Toshiba T-100	monitor	640	200	yes	8
Vector 4	internal	640	312	opt	8
Wicat 150	monitor	400	300	no	—
SPECIALTY GRAPHICS					
Apple Lisa	internal	792	360	no	—
Corvus Concept	internal	720	560	no	—
Cromemco Model SDI	monitor	754	482	opt	16
Hewlett-Packard HP-9000	internal	560	455	yes	4913
ICL Perq	internal	768	1024	no	—
Microprism GDC-512/CMC-100	monitor	512	490	opt	256
Ramtek 2020	monitor	1280	1024	yes	65536
Sun Microsystems SUN-1	internal	1024	800	no	—
Vectrix VX128/VX384	monitor	672	480	yes	512
Xerox Alto	internal	608	808	no	—

1. The display resolution is the pixel resolution of the screen image. Some microcomputers display part of a larger graphics plane.

2. The number of different colors that can be displayed at one time.

SOME OF AUSTRALIA'S BIGGEST COMPANIES WOULDN'T BUY ONE OF THESE...

commodore
COMPUTER

sirius
COMPUTER

IBM

...WITHOUT ONE OF THESE

Sold and Serviced by
MicroComp
Ph: 614 1433. 561 BOURKE ST., MELBOURNE 3000.

In microcomputers, as in any machine, a system is only as good as its backup. Which is our strong suit at Microcomp. For a start, we won't just sell (or rent) you a computer. We'll advise you on the right combination of machines and accessories, and develop custom-designed programs to answer your particular needs, now and in the future.

Then, we're ready with all the backup you need, including on-the-job training, servicing, replacement machines and much more.

All this, plus four years experience in microcomputers, is why the big names above chose us to sell their products. And it's why a lot of other big (and small) names come to us to buy them.

We've set out in black and white what we believe should be your *minimum* requirements, in our Corporate Account Support Policy, which we'll be happy to send you on request. It makes very encouraging reading.

MicroComp

B. S. MICROCOMP PTY. LTD.,
561 BOURKE STREET, MELBOURNE 3000.
CALL BILL SAUNDERS ON 614 1433.

JLM/MC10

Enter M020 on Enquiry Card

High-resolution color graphics are coming down out of the clouds. Tony Smith reports on several high-end micro add-ons.

A graphic fall

TRUE high-resolution color graphics has yet to be marketed within the ranks of general-purpose portables, with the arguable exception of the pioneering Hewlett-Packard 9000. But such systems have been steadily coming down out of the territory of minicomputers and starting to appear as add-ons for top-end micros.

A common feature of such systems is that the binary value from the multiple memory bits dedicated to each pixel is converted by a color-coding process into a selection from a much larger palette of colors than the available data bits would be expected to convey. That effect is achieved by using the binary value formed by the bits for the pixel to "look up" precise tabulated values of the red, green and blue signal strengths associated with that pixel.

The systems described below vary on several criteria, such as arrangement of bit-mapped memory, image resolution, method of communicating with the host computer and nature of driver software provided.

Cromemco SDI

Cromemco was one of the first to introduce high-resolution color for micros with its SDI color graphics interface plugging straight into the S-100 bus of a Cromemco micro. That step was particularly appropriate to the company's US home market, where the emphasis has been on engineering rather than the general-purpose image it has developed in Australia.

By treating its display memory as though it was arranged in four-bit "nibbles", SDI can provide a choice of 16 colors, out of a palette of 4096, or alternatively 16 grey shades. Higher resolution in all or part of the image can be achieved by reverting to one-bit a pixel.

As well as displaying the generated graphics on high-resolution monitors, Cromemco's Australian distributor Insystems has a special image output device to which a variety of cameras can be directly attached for the production of color slides in particular. Cromemco packages its own 13in color monitor and a 48K-byte dual port memory card especially for use with the SDI card.

SME Microprism

Two of the many S-100 bus boards designed and manufactured in Australia by SME Systems combine to provide its Microprism color graphics system in various configurations. SME's GDC-512 graphics display card contains 64K-bytes of RAM and its own Z80 processor, the memory being able to be switched between two 32K-byte pages either of which can serve as the currently active plane of the bit map.

Up to eight GDCs can be connected to one CMC-100 color-mixing card to provide 256 simultaneous colors out of the many millions theoretically defined, by the use of eight-bit variables for each of the red, green and blue intensities. The GDC card can act alone as a monochrome display.

Its internal routines provide most graphic primitives including circles and painting. The CMC card is supplied with a library of color subroutines and some sample programs.

MPA Vectrix

Microprocessor Applications Pty Ltd, the Australian distributor of Micromation S-100 bus multi-user computers, is importing the separately packaged Vectrix graphics systems which can be interfaced to host computers via parallel or serial lines. Vectrix comes in two models, VX128 and VX384, for which the numbers indicate the memory used.

Each 128K-byte memory board is organised into three bit-map planes, giving a choice of eight or 512 simultaneous colors from a theoretical 16 million-plus palette. The Vectrix systems contain an 8088 processor chip and more than 50 two and three-dimensional graphics manipulation commands stored in PROM.

Users also can gain access closer to the hardware level by including their own special drivers or by taking direct control of chip functions. Among the three-dimensional features are rotation and translation in each dimension as well as perspective scaling.

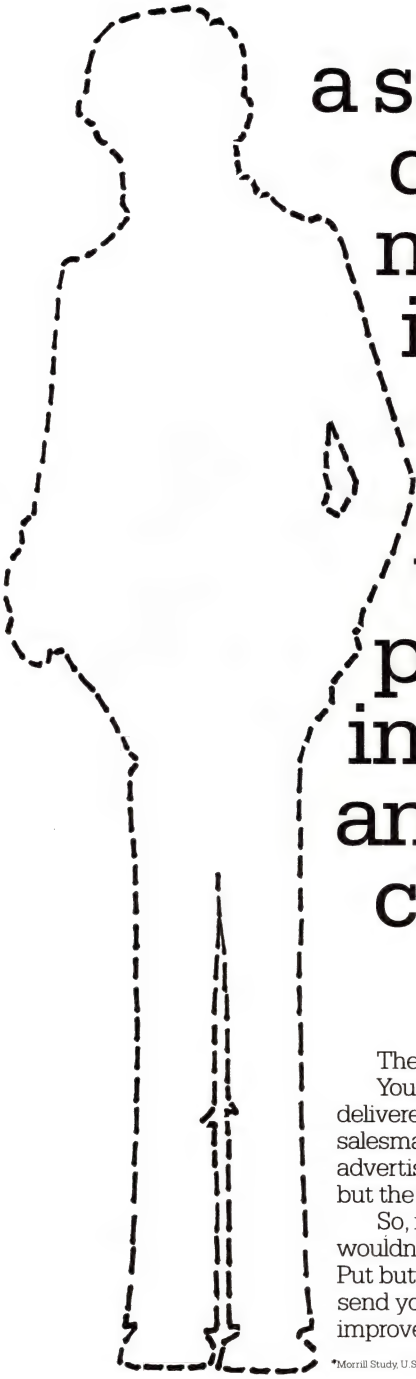
Vectrix supplies a color monitor, color printer and various application packages for its graphics system.

Ramtek 2020

The Ramtek 2020 display generator is at the top end of graphic subsystems which can reasonably be connected to micros, although its home ground is really in the minicomputer area, with the intrusion of (mainly MC68000-based) supermicros just starting to bring such power within reach of the micro market. Ramtek 2020 is a VME-bus system with space for two to 16 planes of dual-ported screen memory and multiple video processors.

Hardware features include a bit slice-draw processor AM29303, VLSI gate arrays, high speed RAM refresh memory and an MC68000 peripheral processor. Ramtek 2020's individual pixel writing time can be as low as 37 nanoseconds, enabling it to refresh its 1280 by 1024 display area 25 times a second.

Ramtek also makes the 6200 color display terminal which has become a proven success for local distributor Intelligent Systems Research, including a prestigious 30-plus terminal site at the Melbourne Metropolitan Board of Works. ☐



Imagine a salesman who doesn't draw a salary, or need a car, or interstate travel, doesn't take holidays or sick days and who calls on every prospect in the industry once a month, and delivers a first class sales presentation every time.

There's no doubt in the world you should hire him before someone else does.

You might not have considered it before, but everything we've promised above is delivered by your industry business publication. That's right, your most cost-effective salesman is business press. What's more, when a company adds specifically targeted advertising to its regular salesforce calls, not only does the cost of the calls go down, but the actual dollar sales increase greatly.*

So, if you would like to improve the sales results of your company, and who wouldn't in these tough times, use Business Press advertising. Put butter on your bread by calling us on (02) 438 2300. We'll send you our fact book that will whet your appetite for improved sales results.

*Morrill Study, U.S.A.

Business Press is Bread & Butter Press

Australian Association of Business Publications.

TAW 109-5

Enter M006 on Enquiry Card

IF LEONARDO DA VINCI COULD HAVE USED ONE OF ROBOCOM'S ROBOGRAPHIC SYSTEMS, HE WOULD HAVE BEEN ABLE TO BUILD . . .

THE FIRST HELICOPTER!

Leonardo da Vinci was the universal man.
His contribution to our civilization was lasting and profound through his influence and expansion of man's understanding of Physics, Engineering, Drafting and Art.

A Robographic System will not make you a Leonardo da Vinci but it will help your **Creativity.**

The powerful computer graphic/CAD system allows, Engineers, Draftsmen, Architects, Designers, Illustrators, Administrators and Educators to create more effectively by leaving tedious alterations, repetition and other time consuming chores to the **Computer.**

What are Robographic Systems?

Based on the Apple II+ or IIe a **Robographic System** comprises of a "BiT STiK" controller and software packages which interface with a wide range of monitors, plotters, printers and digitizers for numerous computer graphics/CAD-CAM applications. The **unique** concept means that with some **Robographic Systems,** you **do not need** to use a keyboard even for "scaling and dimensioning". For storing, retrieving, amending etc the "STiK" is the controller.

The **Robographic System** represents a new approach to CAD-CAM. They are powerful tools yet so easy to use. Because operators do not program **you do not need** computer know-how or prolonged training/familiarisation. Consequently, the system is fast.

Such advanced systems are affordable, in fact they will cost from 1/6 the cost of comparable systems presently available. Due to the cost advantage they are "showpiece" systems, members of your staff can have and use as their own work station.

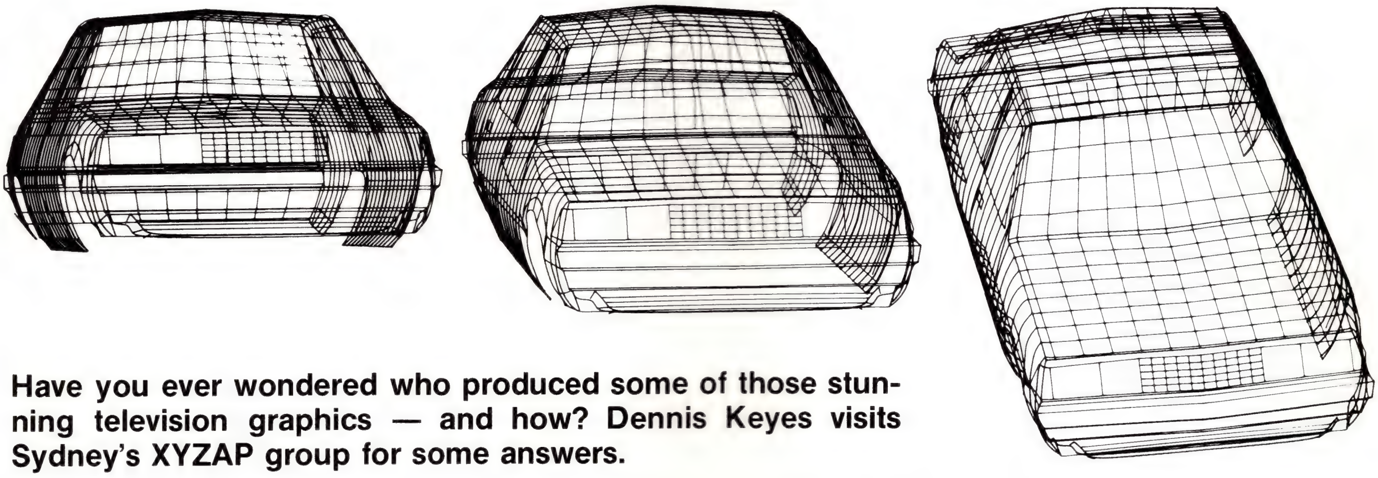
Computer aided drafting systems from **ROBOCOM** are the answer to the needs of today's technical environment. Due to the numerous applications we will not attempt to list them here, however, "seeing is Believing" so we invite you to contact us for a demonstration and the opportunity to ask us how the **Robographic System** will benefit you.

ROBO

ROBOCOM AUSTRALASIA PTY. LTD.
ALMA PROJECT, Unit 8, 663 Victoria St,
Abbotsford Vic 3067 (03) 429 6233

NO DOUBT LEONARDO DA VINCI WOULD BE IMPRESSED BY OUR COMPUTER DESIGNED LOGO

AROB/05



Have you ever wondered who produced some of those stunning television graphics — and how? Dennis Keyes visits Sydney's XYZAP group for some answers.

XYZAPPED!

EVEN if you are only an infrequent television viewer, you could not fail to notice the spectacular displays of color and form that are the products of today's Walt Disneys, the computer animators. The technique is being used both for station identification and regular advertising, for example, Channel 9 in Sydney with its white-lined map of Australia that turns sideon to allow the "camera" to scan in over the continent, passing the outlined shapes of cities on its way to Sydney, (notice, too, that Melbourne is slightly smaller in size), and for regular advertising (Rheem hot water systems, Sigma cars and the introductory titles to Towards 2000 on the ABC).

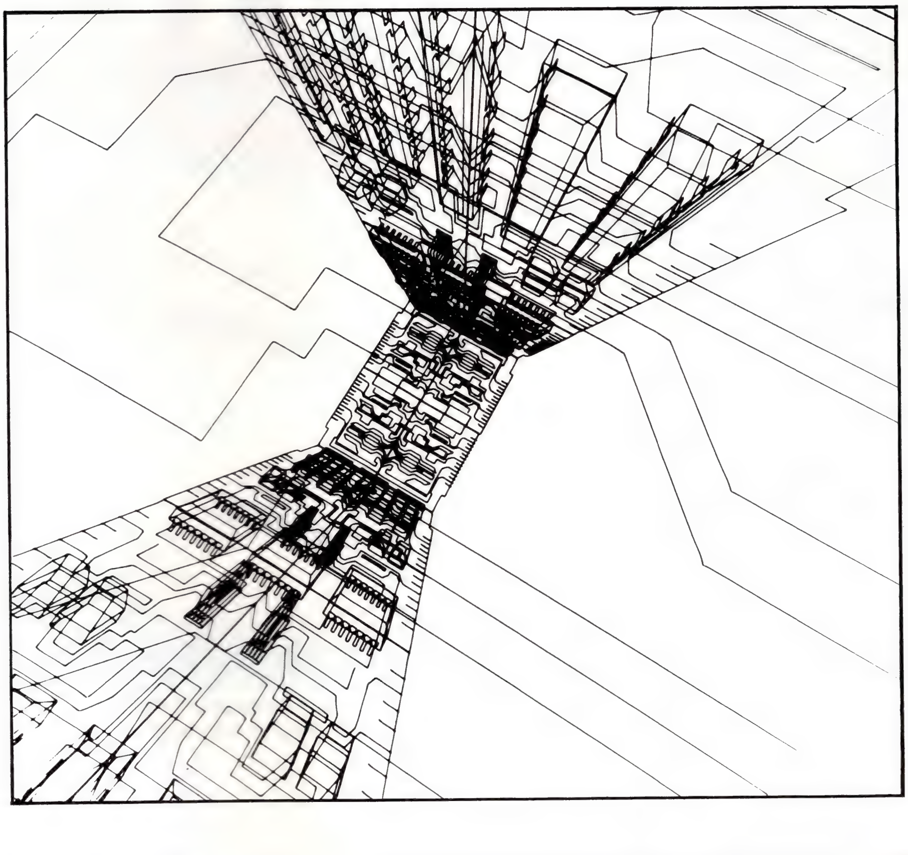
Most station ID work is still done in New York or Los Angeles, but all the above-mentioned, regular ads have been put together by a group called XYZAP, operating out of Artarmon on Sydney's North Shore.

Essentially, the technique is built around a comprehensive graphics package which, after the initial art work has been digitised, allows for rotation or translation of the image with eight different degrees of freedom. The movement can be controlled manually via eight dials (potentiometers) or via an internally stored program after the "choreography" has been decided upon. Input from the pots is translated into equations or matrices to generate the image inversion, rotation, etc.

A separate processor (Motorola 68000) handles the mathematics of these vector changes and communicates them directly to the screen display. When the sequence of movements has been established, the unit is connected to a special high-resolution cathode ray tube bolted onto a bed in front of a 35mm cine camera, which photographs the repeated sequence.

The whole operation is done in black and white, but the result on our television is in striking color. You'll have to read further to find out how XYZAP achieves this — me think it 'mazing!

ZAP has more than $250,000 worth of hardware committed to this venture, with the soul of the system being a DEC VAX 11/730, having five VT100's to control the programming of the images and a special terminal, with standalone capability, to accept inputs from the translational pots and to process and display the image movement. This latter terminal bears the name of the developers of the graphics package, Evans and Sutherland, and contains the M68000 processor, with up to 4 M-



> *"There's no shortage of local talent, it's just a matter of having the stimulus to produce."*

bytes of memory, of which only 256K is allocated to program space.

The rest is required to handle storage of the matrices resulting from decoding of the analog signals via the eight dials. An onboard direct memory access (DMA) controller allows rapid access to this mathematical data, and a Basic-lookalike program language controls the dataflow.

The only limiting factor to image processing is the number of vectors in a display. This is because of the directed vector method of image generation, which requires a refresh rate of something like 25 frames a second to prevent the detection of flickering by the naked eye.

But this only becomes discernable when more than 90,000 vectors are present, giving quite a scope for complexity of animation. The whole operation is really a parallel process, with the decoding of analog to digital data from the pots representing one stream, and the activites in the M68000 of matrix manipulation representing the other.

The whole process was described to me by Russ Maehl (as in mail) the creative director at XYZAP. If you are a programmer or systems analyst yearning for the good old days of every job a brand new challenge (no packaged solutions), and giving clients just what they want, this might be the area for you.

Despite the power of the VAX and the M68000, the procedure is governed by the human interface, with many iterations of review with the creative people, the client, and the technical program builders. The cycle can take up to three months for something like 30 seconds of final output and involves many people.

Maehl outlines the significant steps:

"The computerised animation is just one part, and the most recent, of the many services ZAP offers to the advertising industry. The use of a computer doesn't short-circuit the discussions and other steps that are needed to produce a quality commercial.

'The process usually starts with a theme, done on a story board, by a writer in words, or an art director in pictures. If computer animation is involved, we prepare a plan and elevation view of the theme model, by using a standard CAD digitiser.

"The image is stored as a series of mathematical or geometrical co-ordinates on the hard disk of the VAX. In fact, the VAX is there only to provide us with adequate management of our data files, and the ability to work on more than one project at a time.

"The image resolution and translation is all done within the E and S terminal. Trying to do this sort of thing on an Apple would not produce work of the same quality.

"Evans and Sutherland are two of the most respected names in the graphics industry, and they have incorporated a

TOUGH TYPE

WHEN THE GOING GETS TOUGH
THE TOUGH TI 850 PRINTER GETS GOING.
Texas Instruments

**The brilliant TI 850 Printer is specifically designed as a superior printer for low budget print requirements. It delivers page after page of the toughest printing in the business world.
So it's no tough choice . . . just a tough printer.**

Also distributed by: VSI Electronics (Australia) Pty Ltd. Datatel Pty Ltd. Anderson Digital Equipment Pty Ltd.

TEXAS INSTRUMENTS
SYDNEY (02) 887 1122, MELBOURNE (03) 267 4677
TEXI0079

lot of sophistication into this concept, via their experience with airline simulators. Next, the artwork is choreographed to run in line with the storyboard, giving things like near and far perspective and any necessary image rotation. For this, we use the eight dials attached to the control board of the E and S device, coupled with interpretive programming language, to set up individual displays for each project.

"At present, we have people from Techway here, assisting with this phase, but ultimately, I'll be doing it myself. In cases where the animation is complex, we have to break it up. We can't do it all at once, and this is also the way that we get full color on the final product. We do the breaking up by generating a series of separate images, just like sub-assemblies or components in a normal CAD system.

"We can then store each of these images individually, or combine them into one entity. To get the color, we just run an animated sequence with one of the components, passing the image through a colored filter before it registers on the camera.

"To get the next shade, we back up the film and run the next component with whatever filter is required. We can do this because the high-resolution screen and camera are locked into a fixed relationship with one another, and all we're doing is multiple exposures on the same piece of celluloid.

"The last step is the synchronisation of the image with an audio signal, leading to the final product."

Maehl is just like the systems analysts of old, who entered the data-processing industry with backgrounds ranging from full-time ticket collectors to part-time brain surgeons. Their only qualifications for this new role were an attitude and aptitude conducive to getting the job done.

They served as the link between the overawed end-user, and the head-in-the-clouds technical boffins. In the same way, Maehl's role is very much an intermediary between the same two groups of people, represented at ZAP by the creative-ideas staff, and the Techway programmers.

Eventually, his role will change to more analyst/programmer, as he begins to take over the technical functions personally. Maehl has a degree in psychology, which perhaps fits him well to sit between the left and right-brain dominated individuals needed to implement this new technology.

Physically, he has a full beard and head of hair, which caused one television interviewer to refer to him, in his lair, as looking like Chubacher among remants of the Star Wars set.

He has been in the computer animation industry for 11 years, both here and in the US (he is American), and has seen the progress from initial analog devices to the current digital approach, and has seen the change from film to video-based output. Maehl comments on these changes and his entry into the industry:

"I started with a group called Computer Image in Denver, using a device called the Scanimate. This was an analog computer, and the first that made it feasible to make money out of computer animation.

"It worked in realtime, and had a patch panel to allow the operator to manipulate the parameters, much like the potentiometers do on this E and S system. I next spent about seven years with a company called Image West, operating out of Los Angeles.

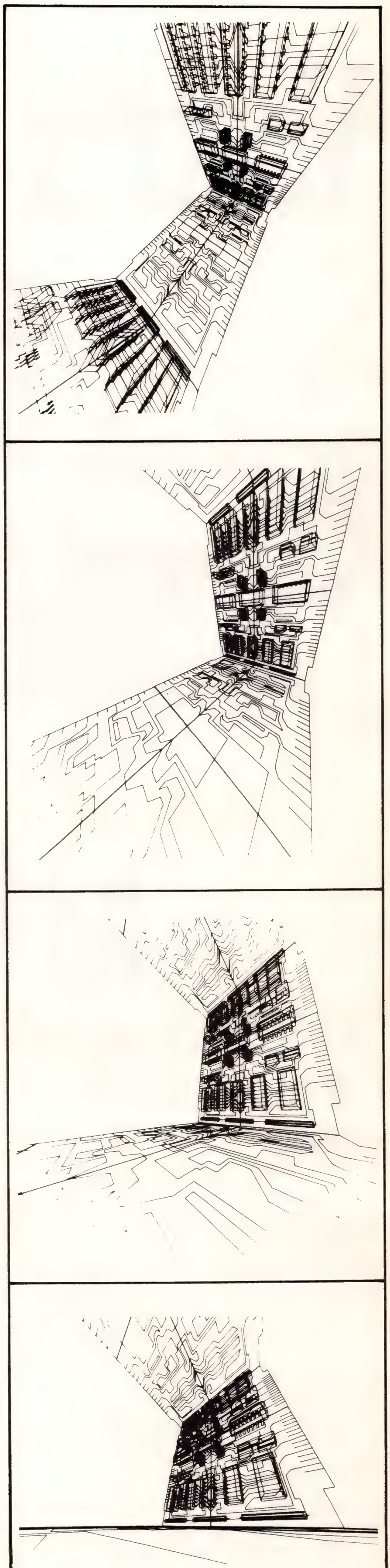
"This was a video-based concept, that gave particular flexibility in realtime production. There's always this tradeoff between video-based and film-based systems.

"On one hand, video allows you to operate successfully in realtime, whereas with film, you've got better resolution, better segmentation and recoloring, and you can do things like front projection, painting on glass and multiple passes of the image. Four years ago, I came out to Australia to help install a local version of the Scanimate, and I've been here ever since.

"I joined ZAP about 12 months ago to implement this Evens and Sutherland system sold to ZAP by Techway. The market promises to be very good, because the television industry is on a technological merry-go-round, with each network trying to outdo the others in innovation and quality.

"Up until now though, a limiting factor on the growth of a local capability, has been the attitude to get most of the work done in the States. This is really creative laziness, because they're just re-using the ideas of their American counterparts, instead of producing locally, and it's costing them three to four times as much to do it that way.

"There's no shortage of local talent, it's just a matter of having the stimulus to produce. The Broadcasting Control Tribunal has taken recent steps to redress this imbalance by encouraging greater use of local facilities" ☐



A sequence of frames generated for the ABC's top rating program Towards 2000.

Vectrix color graphics machines from MPA. As unlimited as the imagination.

Unbelievable graphics at an unbelievable price.

High performance color graphics are for the first time, a real option for the micro and mini computer user. The Vectrix VX 128 and VX 384 both provide exciting, high quality color graphics for a fraction of the cost of other systems with similar capabilities.

With Vectrix and a little imagination, utilizing onboard 2D & 3D software, the user can open up all sorts of amazing possibilities with things like business and presentation graphics, computer-aided instruction systems, image analysis, intelligent color terminals, computer-aided design, even video animation.

If it's color you want, both Vectrix units make sure the user never runs out. The VX 128 offers a palette of 8 colors with 128K graphics RAM and 3 bit planes while the VX 384 offers a choice from a staggering 16.8 million colors in its palette with 348K graphics RAM and 9 bit planes.

Naturally seeing is believing, so if you are looking for superior color graphics at a surprisingly realistic price, make sure you look at Vectrix soon.

The MPA Story.

Preferred microcomputer supplier to Victorian Govt.

Since 1979 MPA has experienced remarkable growth and is now a force in the Australian computer industry.

This growth has come from carefully planned objectives, the major one being to source only innovative, high quality technology that represents value-for-money. Technology from industry leaders such as Wyse, Vectrix and Micromation. Another important objective was that after-sales service and technical back-up were not just promises made, but promises kept.

Why not call MPA now, you'll find that what we're offering is simply outstanding technology.

mpa

Microprocessor Applications Pty Ltd
48 Rutland Road, Box Hill, Victoria. 3128.
Phone: (03) 890 0277 Telex: AA31187

Simply Outstanding Technology

I would like to know more about Vectrix.

Name ______________________

Company ______________________

Position ______________________

Address ______________________

______________ Phone No. __________

R2/MPA 183/244

Enter M009 on Enquiry Card

After extensive research into the best this world can offer, President is proud to present to fellow Australians what we believe to be the top range of computer systems available on the market today.
Just have a look over the next four pages - we're sure you will agree.

president

COLUMBIA BUILT FOR EXPANSION

This prestigious system gives the best of both worlds. Designed to take advantage of the 16-bit microprocessor generation, we also offer a Z-80 CPU/ CP/M-based 8-bit expansion system. We also include thousands of dollars worth of MS-DOS™ and CP/M DOS™ compatible software with every package. Other features are 5¼" (135mm) floppy disk storage and **IBM-PC**™ compatible software and hardware.

$3,995
(inc. tax)

COLUMBIA
VP-*portable*

$5,995 (inc. tax)
for Double Floppy System
– 10 megabyte available.

Most of the features of the above computer presented in a highly portable package. Even the most advanced applications are no problem for VP's sophisticated 16-bit 8088 128K/256K RAM processor. Rugged, lightweight **IBM-PC**™ compatible software and 23cm (9") high resolution screen are built in for ease of operation. The best news of all is the price.

Enter M000 on Enquiry Card

Hey Big Brother

$2495
(inc. tax)

Revolutionary
Australian
Design

Progress is inevitable

Did you realise that 1984 is just around the corner? Competition is pretty fierce these days, in all walks of life. The Australian company Dulmont are aware of this, and anxious to remain a forerunner of high technology, they have, after extensive research, created the Magnum Macro- Computer – for the business man or woman, the housekeeper, the student, or whatever your vocation – it's your own, long-awaited, personal, portable, affordable secretary.

Designed in Australia, by Australians, for the world – Even George Orwell would be amazed.

1884–1984

Please send me your full colour brochure which provides specifications and explains the Magnum in more detail.

Name. . . . .

Address. . . . .

. . . . Ph . . . .

Post coupon to: President Computers Pty. Ltd.
100 George Street, Hornsby 2077 Ph. 476 2700

MAGNUM MACRO-COMPUTER

Why Macro?

Well, just look at the mammoth storage capacity, massive range of accessories and software, and mighty powerful set of standard features. Optimumly sized, a smaller machine is certainly possible, but would be highly impractical, the keyboard would become non-functional. The Dulmont Magnum Macro-Computer – it's the ultimate combination, never before available in a portable system.

Features include:

- Full size qwerty keyboard with user definable function keys
- 80186 bit CPU processor
- Battery powered (up to 20 hours before recharging)
- Supporting up to 256 K BYTES of CMOS RAM, 128 K of ROM
- 8 line x 80 character liquid crystal display with dot addressable graphics
- Two serial and one parallel I/O port
- Advanced ROM based operating system and resident basic interpreter
- Housing in a very portable package 305 mm x 279 mm x 305 mm
- Weight of less than 4 kg.
- Inbuilt software – word processing financial planner and diary.

Enter M001 on Enquiry Card

KAYPRO II
KAYPRO 4
KAYPRO 8
KAYPRO 10

The Kaypro family– Australia's widest choice of transportable computers.

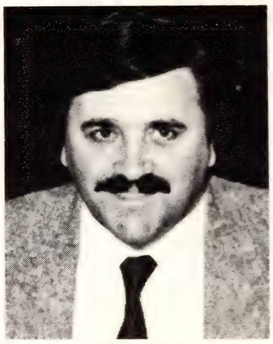
$2 500 worth of software included
ALL YOU MAY EVER NEED

- Detachable keyboard for maximum manoeuvrability
- 9" 80 character x 24 line green phosphor display screen
- Weighs just 13 kilos, housed in a durable carrying case
- Prices for Kaypro

	II	(400 K)	$3295
	4	(800 K)	$3595
	8	(1.6 M/BYTE)	$4395
(with graphics)	10	(10 M/BYTE)	$6215

president GROUP

Enter M002 on Enquiry Card

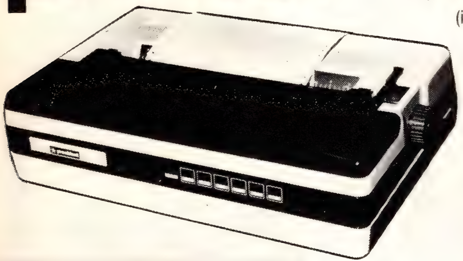


TOM COOPER – M.D.

13 years ago, the President Office Machine Group began, distributing typewriters and calculators. In 1977 we commenced building calculators from S.K.D. kits and followed shortly with a typewriter factory of our very own. It was in 1980 that we made the move to computers, buying design rights to the Australian system Concept II, and committing ourselves to the formidable task of finding the optimum in equipment from a world-wide selection.

Now, in 1983, President can offer not only top quality computerware, we can offer it throughout Australia with 160 dealer outlets, 400 vehicles and 900 personnel. That's experience totalling around 2,700 years. They'll come to you, to your office, with the President promise of servicing whatever we sell.

president printer $690
(inc. tax)



Major President Outlets

NEW SOUTH WALES

Computermax
539 Pittwater Road
BROOKVALE 2100
Ph. (02) 93 1383 A.H. 908 1718
Open 8.30-5 Mon.-Fri 8.30-12
Sat. Contact Max Leonard

Desktop Computers
10 Cowper Street
GRANVILLE 2142
Ph. (02) 637 3062
Open 9-5 Mon.-Fri. 10-4 Sat, Sun.
Contact Charlie Dorn

President Computers
Rear 100 George Street
HORNSBY 2077
Ph. (02) 476 2700
Open 9-5 Mon.-Fri. 10-4 Sat, Sun.
Contact Hugh Burns

Computer Galerie
66 Walker Street
NORTH SYDNEY 2065
Ph. (02) 929 5497 Open 9-6
Mon.-Fri. 9-8 Thurs., 9-2 Sat.
Contact David Diprose

Delta Computers
12 Fetherstone Street
BANKSTOWN 2200
Ph. (02) 705 6636 A.H. 639 0248
Contact Wanda Bates Open 9-5
Mon.-Fri. Contact Garry Wylie

Dataspeed
3rd Flr, 355 Sussex St.
SYDNEY 2000
Ph. (02) 267 9999
Open 9-5 Mon.-Fri., 9-2 Sat.
Contact P. Marjot

VICTORIA

Minit Computers
119 McCrae Street
BENDIGO 3550
Ph. (054) 43 2589
Open 9-5 Mon.-Fri. 9-12 Sat.
Contact Len Williams

Robs Computer Center
275 Thomas Street
DANDENONG 3175
Ph. (03) 791 2900
Open 9-5.30 Mon.-Fri. 9-12 Sat.
Contact Rob Kloester

Halifax Business Systems
160 Johnston Street
FITZROY 3065
Ph. (03) 419 8144 Open 9-5
Mon.-Fri. Contact John Hopkins

Greensborough Computers
81 Grimshaw Street
GREENSBOROUGH 3088
Ph. (03) 434 6166
Open 9.30-5 Mon.-Fri. 9.30-4 Sat.
Contact Kevin Heraud

President Computers
Suite 1, 609 St Kilda Rd
MELBOURNE 3004
Ph. (03) 529 1788
Open 8.30-5 Mon.-Fri. 9-12 Sat.
Contact Steve Freeman

The Computer Fair
180 Flinders Street
MELBOURNE 3000
Ph (03) 63 4324
Open 9-5 Mon.-Fri. 9-12 Sat.
Contact Bill McPherson

QUEENSLAND

Cygnus Computer Services
Suite 4, 104 Fitzroy St.
ROCKHAMPTON 4700
Ph. (079) 27 8872 A.H. 27 1794
Open 9-5.15 Mon.-Fri.
Contact David Halsey

President Queensland
416 Logan Road
STONES CORNER 4120
Ph. (07) 397 0888
Open 9-5 Mon.-Fri. 9-12 Sat.
Contact Bill Brown

Software-80
Shop 8/200 Hoggill Rd
TARINGA 4068
Ph. (07) 371 6996
Open 9.30-5 Mon.-Fri. 9-7 Thurs.,
9-12 Sat. Contact Alex Morrison,
Tony Melius

SOUTH AUSTRALIA

Peterson Business Machines
100 Pirie Street
ADELAIDE 5000
Ph. (08) 223 6333
Open 9-5 Mon.-Fri. 9-11.30 Sat.
Contact Reg Goodhew

Microhouse
384A Unley Road
UNLEY PARK 5061
Ph. (08) 272 4370 Open 10-6
Mon.-Fri. Sat. by appointment
Contact Geoff Maloney

WESTERN AUSTRALIA

Micro EDP & Hardware
9a/1 Leura Avenue
CLAREMONT 6010
Ph. (09) 384 5511
Open 9-5.30 Mon.-Fri. 9-12.30
Sat. Contact Gary Triffitt

president GROUP

SETTING THE STANDARD

Enter M003 on Enquiry Card

Gee Whiz BASIC

Microsoft's GW-Basic is an extended Basic developed to take advantage of the graphics features of 16-bit microcomputers. Tony Smith reviews an implementation for the DOT portable.

AFTER the first rush of novel screen graphics applications, culminating in the Micro Lotto program which ran throughout the 10ACC exhibition, GW-Basic has been used to redevelop the system for producing fixtures for a 230-team cricket association, and for the design and development of a forms design cum data-entry package. DOT has been solidly based on MS-DOS, but in many ways it gives an even stronger impression of being first and foremost a GW-Basic machine.

While there are some bugs in the tested version of GW, and the language doesn't really come to terms with some of DOT's more exotic screen formats, its attractive features are so strong that one is virtually forced to use it at every opportunity.

The plethora of features collected within the three defined levels of Gee Whiz Basic, to give the language its concept name, enable powerful and direct use of hardware facilities as well as short-cut methods of producing gross effects, especially with graphics and sound.

Full-screen editor

The first of the 85 pages in the Microsoft GW-Basic addendum to the MS-Basic language manual for DOT is a simple three-paragraph note box, starting: "The time-saving benefit of the full-screen editor during program development cannot be overemphasised." Rarely has a truer claim been made.

GW's full-screen editor actually reads characters back out of screen memory from a listed section of program or any other source. This may be used repeatedly to vary portions of an immediate mode statement before inserting a line number in front of it to include it in a program.

Sections of code which are repeated with minor variations can be generated rapidly by entering the new statement numbers and code variations on top of previously listed statements which are not effected in any way. The accompanying sample program includes several lines of code which are only slight variants of preceding lines and thus were able to be entered very quickly using the editing features.

Such repeated lines seem to be particularly common in screen graphics applications. The cursor control, insert, backspace and delete keys are all used sensibly to achieve the new statements desired, with a statement being included in a program when RETURN is pressed with the cursor anywhere on that line.

For those with good memories, even faster programming is achieved by using the function keys and the ALT mode combined with most of the alpha keys for single keystroke entry of keywords.

Graphics

Many people's impression of GW is that it is just a graphics extension to Basic, which says more about the power of its graphics than any imagined lack of other features. Beyond the common points, lines, rectangles, eliptical curves and area painting, quite extraordinary effects

SAMPLE PROGRAM

This program moves a diamond-shaped, turtle-like symbol within a bordered screen, governed by the cursor movement keys. The ESC key terminates execution. The symbol leaves a one-pixel-wide trail where ever it goes, except that it rubs its trail out by doubling back. A special effect occurs when attempting to move along any of the boundaries. *Note:* The obvious economies of using the full-screen editor for entry of lines 140-180 and 240-310.

```
100 DIM BEFORE(2),AFTER(2),RIGHT(2),LEFT(2),UP(2),DOWN(2)
110 DATA 29,28,31,30:FOR I=1 TO 4:READ OPPO(I):NEXT I
120 SCREEN 2:CLS
130 PSET(100,97):DRAW"F3G3H3E2":PAINT(100,98):GET(97,97)-(103,103),BEFORE
140 PUT(197,97),BEFORE:PRESET(200,100):GET(197,97)-(203,103),AFTER
150 PUT(297,97),BEFORE:PUT(298,97),AFTER:GET(297,97)-(304,103),RIGHT
106 PUT(397,97),BEFORE:PUT(396,97),AFTER:GET(396,97)-(403,103),LEFT
170 PUT(497,97),BEFORE:PUT(497,96),AFTER:GET(497,96)-(503,103),UP
108 PUT(597,97),BEFORE:PUT(597,98),AFTER:GET(597,97)-(603,104),DOWN
190 CLS:LINE(4,4)-(635,195),,B:PAINT(0,0)
200 X=317:Y=97:PUT(X,Y),BEFORE
210 WHILE K<>27
220  K$=INKEY$:IF LEN(K$)=0 GOTO 220 ELSE K=ASC(K$): IF K <27 OR K> 31 GOTO 220
230  IF K=OPPO(PREV) THEN PSET(X+3,Y+3),1-POINT(X+3,Y+3)
240  IF K=28 THEN PUT(X,Y),RIGHT:X=X+1
250 IF K=29 THEN X+X-1:PUT)X,Y),LEFT
260  IF K=30 THEN Y=Y-1:PUT(X,Y),UP
270 IF K=31 THEN PUT(X,Y),DOWN:Y=Y+1
280  IF X> 631 THEN PUT(X,Y),AFTER:X=X-631:PUT(X,Y),BEFORE:GOTO 300
290    IF X <2 THEN  PUT(X,Y),AFTER:X=X+631:PUT(X,Y),BEFORE
300  IF Y>  191 THEN PUT(X,Y),AFTERY=Y-191:PUT(X,Y),BEFORE:GOTO 320
310    IF Y <2 THEN  PUT(X,Y),AFTER:Y=Y+191:PUT(X,Y),BEFORE
320  PREV=K-27
330 WEND
340 SCREEN 0
350 END
```

can be achieved by the very special GET, PUT and DRAW statements.

When not given the file number required in the syntax of their use-for-random disk file input-output, GET and PUT will store and restore bit-mapped images from the screen to memory arrays. PUT defaults to XORing the stored image with its target area which is useful for (slow) animation and texturing, but also offers AND, OR and effectively not.

The sample program uses such a technique to achieve its animation effect. DRAW is the entry into Microsoft's graphics macro language which interprets the characters in a string as where-to-go-to-next instructions, U7 meaning up seven pixels, etc.

australian **Micro** computer magazine

Software Report Card

GW-Basic

	Poor	Fair	Good	Excellent
Performance	☐	☐	☐	☑
Documentation	☐	☐	☑	☐
Ease of Use	☐	☐	☐	☑
Error Handling	☐	☑	☐	☐

System requirements:

- 8088/8086 processor
- MS-DOS

Price: OEM basis only.

Distributor: Wiser Microsoft, 21 Tepko Rd, Terrey Hills, NSW 2084. Telelphone: (02) 450 2522.

It is ideal for generating special symbols, fancy lettering and tiling patterns. Although the compilation of GW-Basic programs was not tested, the documentation warns that the recursive features of DRAW and PLAY (see table) cannot be compiled.

Other features

In the sound area, PLAY is the equivalent of DRAW. A one-line PLAY statement is all that is needed to produce many very recognisable tunes from the DOT's speaker which does not really do justice to the electronics that drives it. More GW statements give effective access to asynchronous communications, screen formatting and disk files.

BSAVE and BLOAD, when used in conjunction with graphics GET and PUT, provide a way of storing images on disk for use by other programs, and can be used for any kinds of data to remove most data collection from key processing programs.

Nit picking

All that temptation has its price, with several faults in the version of GW tested on the DOT; faults which can be avoided once they are identified without significantly impacting the language's utility.

Those noted have been:

- SCREEN 4 and SCREEN 5 both execute, but provide screen images which appear to dissolve under a variety of circumstances, sometimes unrecoverably.
- PUT destroys most of the contents of the source array, so cannot be used to generate repetitively the same image without overtly storing a backup copy in another array, except for images eight pixels or less wide, such as all those used in the sample program.

GW-BASIC — Extensions to BASIC

These modifications and extensions of MBasic commands, statements and functions show the influence of users on implementations of Basic.

EDIT ⟨line number⟩ displays line, putting cursor at start
GET (x1,y1)-(x2,y2), ⟨array name⟩ gets bit map from screen
GET/PUT ⟨file number⟩, ⟨length⟩ fixed length communications
LIST ⟨line number⟩-⟨line number⟩, ⟨device⟩ direct to device
OPEN ⟨device⟩ ⟨file name⟩ FOR ⟨mode⟩ AS #⟨file number⟩
RETURN ⟨line number⟩ exits flexibly from event traps
PUT (x1,y1), ⟨array name⟩, ⟨action⟩ copies bit map to screen
VARPTR ⟨file number⟩ gives address of file control block
XWIDTH ⟨file number/device⟩, ⟨size⟩ apply to file or device

SCREEN CONTROL AND GRAPHICS

CSRLIN returns current cursor position line on screen
CIRCLE (x1,y1), ⟨radius⟩, ⟨attribute⟩, ⟨start angle⟩, ⟨end angle⟩, ⟨aspect ratio⟩
CLS clears the screen
COLOR ⟨foreground⟩, ⟨background⟩ controls intensity, etc.
LINE (x1,y1)-(x2,y2), ⟨attribute⟩, ⟨option⟩ draws line or box
LOCATE ⟨row⟩, ⟨column⟩, ⟨cursor shape⟩ positions for text I/O
PAINT(x1,y1), ⟨paint attribute⟩, ⟨border attribute⟩
POINT (x1,y1) returns screen attribute of (x1,y1)
PSET/PRESET (x1,y1), ⟨attribute⟩ sets or resets one point
SCREEN ⟨mode⟩, ⟨multiple text page selection⟩ sets format

Throughout the preceding (x1,y1), refer to pixel locations, and ⟨attribute⟩ refers to the shade to be plotted — 0 for black or 1 for white in high resolution

Other GW-BASIC STATEMENTS AND FUNCTIONS

BEEP equivalent to PRINT CHR$(7), standard warning sound
BLOAD/BSAVE ⟨file name⟩, ⟨offset⟩, ⟨length⟩ memory to and from disk
DATE$ returns or sets date
DEF SEG+⟨address⟩ sets base address for relative offsets
KEY ⟨key number⟩, ⟨string⟩ defines and displays function keys
LOF ⟨file number⟩ returns number of bytes allocated to file
SOUND ⟨frequency⟩, ⟨duration⟩ activates speaker
TIME$ returns or sets time

EVENT TRAPPING

Event specifiers COM (1) or (2), KEY (1 to 14), PEN and STRIG (1 or 2) can be used within ON/GOSUB statements, and may be activated, de-activated or held by ⟨event specifier⟩ ON/OFF/STOP respectively.

MACRO LANGUAGES

DRAW ⟨string⟩ executes Microsoft's Graphic Macro Language.
PLAY ⟨string⟩ executes Microsoft's Music Macro Language.

These "languages" use strings of single or double letter commands followed by numbers giving some appropriate measures for the commands. In both, there are features not supported Microsoft's Basic compiler.

- LOCATE sets the cursor position for subsequent PRINT statements, but sometimes leaves spurious triangle shaped characters in unpredictable locations on graphics screens.
- PEEK and POKE do not work when addressing the static RAM, although they do in MBasic and earlier prototype versions of GW.
- DOT's unusual screen aspect ratio puts a slight kink in any sized circle about 60 pixels above and below the centre, appearing as a line on patterns of concentric circles and able to be overcome by specifying an aspect ratio of 1.003 instead of accepting the default.

Performance

The measure of performance of any programming language only can be in terms of what it sets out to achieve. Basic has always been primarily for the purpose of getting programs up and running quickly without execution speed being of any real importance. By that measure, GW's inbuilt full-screen editor, alone, puts it head and shoulders above the rest.

The graphic primitives are reasonably quick, although it is not hard to design a program which takes some time to paint an unbouded shape covering the whole screen. The powerful GET and PUT are too slow for more than token animation, although the equally useful Graphics Macro Language is too quick for the eye to follow.

Documentation

The documentation provided by DOT manufacturer Computer Devices Inc was in the form of an addendum to its version of the M-Basic manual. The content of the addendum was quite comprehensive and contained fewer inaccuracies than reasonably could have been expected for a beta-test version, but its organisation appeared ad hoc when compared to the main M-Basic manual.

The addendum jumps straight into the editor, after which it is broken into three sections, representing three stages of implementation of the features contained within GW. Within each section, statements and functions are mixed, occasionally within seemingly arbitary groups.

The third section including advanced graphics and the PLAY command is very conversational, although the mixture of definition and discussion throughout the addendum works as an economical way of introducing some features which are a lot less familiar that the original M-Basic statements and functions.

"You'll receive your software manual very soon. We're nearly finished with the final binding procedure."

Ease of use

Ease of use is what GW-Basic is all about. It lets the user do powerful things easily, while at the same time making available just about all the functionality of the machine. The only thing which may tax the user is memorising the full range of its facilities and short cuts.

GW really is quite a large language.

Error handling

GW-Basic makes no attempt to improve on M-Basic's conventional error handling, that is leaving it up to the user program to determine anything more intelligent than "Syntax Error".

Summary

If you want the easiest method of developing original programs, outside the constrictions of so-called fourth generation languages, then you should look seriously at GW-Basic. If your application includes bit-mapped graphics on a 640 pixel by 200-line screen then look even more closely, GW is almost certainly the product to get you going.

GW-Basic is only available as an OEM product from Microsoft, but is usually available from the manufacturer of many MS-DOS microcomputers.

BABY34

BABY/34 TURNS
THE IBM PC
INTO A BABY
SYSTEM/34

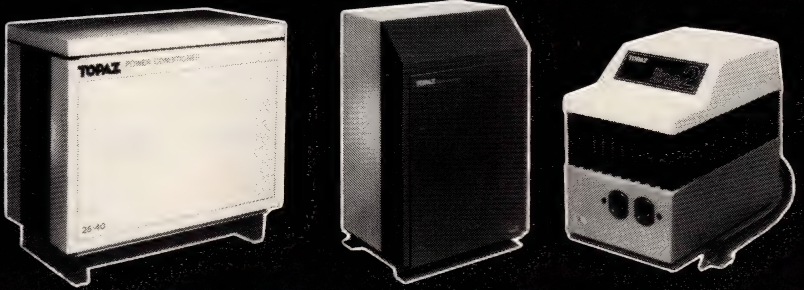
Ask for the BABY/34 Introductory Kit from BCM,
Business Computer Management Pty Ltd,
140 Arthur Street, North Sydney 2060. ☎ (02) 436 3755

Enter M044 on Enquiry Card

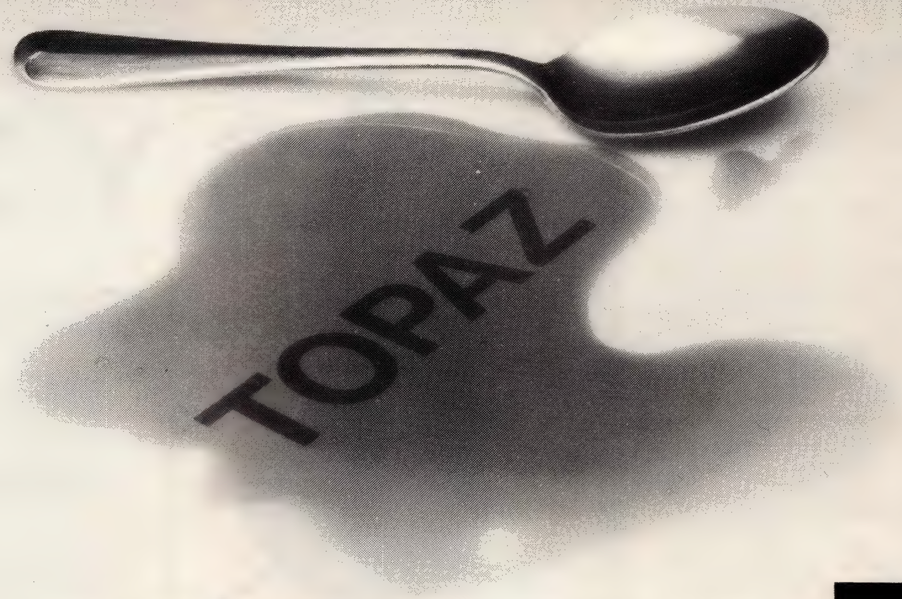
If you think your computer's sick ...

Computer problems don't always start with your computer. There are many factors affecting any computer room environment, but probably the single major difficulty lies in the power source. The new Topaz Power Conditioners have been designed specifically to protect mainframe computers from the problems of power line noise and voltage fluctuations. With wide range input/narrow band output, transient noise protection, dynamic regulation, low output impedance, brownout protection, overvoltage protection, and unmatched efficiency and economy, Topaz Power Conditioners lead the industry in AC power regulating capabilities.

So next time your computer's not 100%, it may not be the computer at all. For the right medicine, call the experts at Warburton Franki, and we'll tell you all you need to know about the Topaz range of Power Conditioners.



we've probably got the right medicine.



WARBURTON FRANKI

● ADELAIDE (08) 356-7333 ● BRISBANE (07) 52-7255 ● HOBART (002) 28-0321 ● MELBOURNE (03) 699-4999
● PERTH (09) 277-7000 ● SYDNEY (02) 648-1711 ● AUCKLAND N.Z. (09) 50-4458 ● WELLINGTON N.Z. (04) 69-3016

WF

WF882/81

Enter M067 on Enquiry Card

GSX-86

GSX-86 is Digital Research's means of providing access for programs running under its CP/M-86 operating system to the graphics capabilities of microcomputers and peripherals. Tony Smith reports:

AS WITH many so-called products of the big-name software houses, rights to GSX were obtained by Digital Research from Graphic Software Systems Inc, hence the GSX initials.

The first impression GSX gives is that it would not be out of place as a product of some would-be standards organisation. But there are aspects of its style which are reminiscent of Digital Research's own foundation product, CP/M.

The key point of GSX is its definition of a standard assembly language calling mechanism interface applications programs to the device specific graphics input/output system (GIOS). GIOS modules are connected to CP/M-86 and to application tasks via the graphics device operating system (GDOS) which primarily is concerned with selecting the required GIOS module and scaling coordinates from applications' normalised space to specific devices' pixel counts or plotter increments.

The Programmer's Guide claims GDOS contains basic device independent graphics functions, but queue/-spooling control apart, these must be minimal, as the interface requirements for the calling program are apparently identical to those for GIOS modules. The GDOS-GIOS structure in some ways parallels the BDOS-BIOS structure which provides the basic input/-output and especially disk file interfaces underlying conventional operating systems like Digital Research's CP/M family.

Two major differences are that (even in this era of cheap and addressable memory banks) the GIOS module for only a single device can be resident at any time, and the generally friendlier command interpretation provided within operating systems is relegated to separate products for graphics functions. GSX-86 defines 33 operation codes, two of which are modified by a range of function identifiers.

One defines device independent escape codes, two of which are modified by a range of function identifiers.

One defines device independent escape codes to achieve a subset of the operations typically provided on modern terminals and printers by escape sequences embedded in text, the other creates graphics primatives which may utilise intrinsic capabilities of particular devices.

Other drawing operations plot a series of points (individually, joined in a line, or as a filled polygon) or selectively superimpose a rectangular bit-map cell on the pre-existing image. Most operations are

(Continued on page 105)

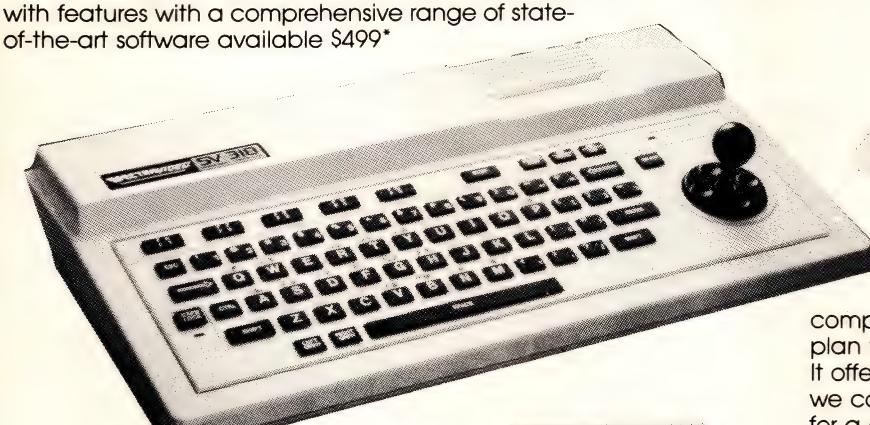
Summary of GSX-86 operation codes

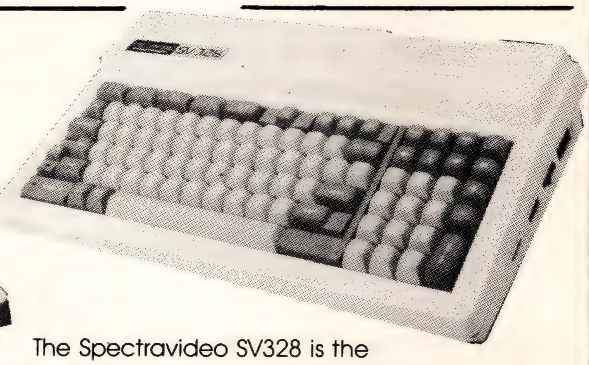
1 OPEN WORKSTATION — initialise device, load its GIOS
2 CLOSE WORKSTATION
3 CLEAR WORKSTATION — new page
4 UPDATE WORKSTATION — complete operations in queue
5 ESCAPE — utilise escape codes
  1 Get number of character rows and columns
  2/3 Enter/exit graphics mode
  4/5 Cursor up/down
  6/7 Cursor right/left
  8 Cursor home
  9/10 Erase to end of screen/line
  11/18 Move cursor direct
  12 Output text from cursor position
  13/14 Reverse video on/off
  15 Get cursor location
  16 Get status of graphics tablet
  17 Make hardcopy
  19 Hide cursor
6 POLYLINE — plot a line connecting a series of points
7 POLYMARKER — plot markers at a series of points
8 TEXT — output text from specified location
9 FILLED AREA — plot and fill a polygon
10 CELL ARRAY — superimpose a rectangular bit map
11 GENERALISED DRAWING PRIMITIVE
  1 Bar
  2 Arc
  3 Pie slice
  4 Circle
  5 Print device dependent graphic characters
12 SET CHARACTER HEIGHT — text size
13 SET CHARACTER UP VECTOR — text rotation
14 SET COLOR REPRESENTATION — from theoretical pallette
15 SET POLYLINE LINETYPE — continuous, dashed, dotted
16 SET POLYLINE LINEWIDTH
17 SET POLYLINE COLOR INDEX
18 SET POLYMARKER TYPE
19 SET POLYMARKER SCALE
20 SET POLYMARKER COLOR INDEX
21 SET TEXT FONT — device dependent
22 SET TEXT COLOR INDEX
23 SET FILL INTERIOR STYLE — solid, outline, crosshatch pattern
24 SET FILL STYLE INDEX — crosshatch or pattern type
25 SET FILL COLOR INDEX
26 INQUIRE COLOR REPRESENTATION — complements 14
27 INQUIRE CELL ARRAY — complements 10
28 INPUT LOCATOR — from tablet, mouse, joy stick, etc.
29 INPUT VALUATOR
30 INPUT CHOICE
31 INPUT STRING — keyboard characters
32 SET WRITING MODE — replace, overstrike, complement, erase
33 SET INPUT MODE — on request or automatic sampling

Where to go for Spectravideo?

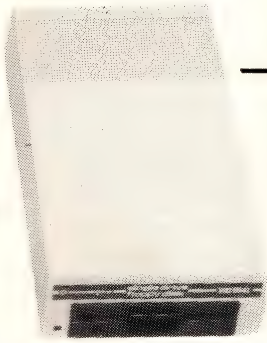
Sydney's largest stockist of VIC 20 and C64 utilities and software are proud to announce that a complete range for Spectravideo is now available ex-stock.

The remarkable Spectravideo SV318 is packed with features with a comprehensive range of state-of-the-art software available $499*





The Spectravideo SV328 is the computer for the small business that doesn't plan to stay that way.
It offers so many features and advantages we couldn't start to mention them. Come in for a demonstration. $799*



The Commodore 1541 Disk Drive. Uses standard 5¼ inch floppy disk and stores up to 170,000 characters of program or data information. Unit includes own microprocessor and memory system. $499*

The commodore 64 needs no introduction and are available ex-stock. $499*

Commodore stocks include:

Commodore 801 Printer	$399*
Commodore Printer/Plotter	$299*
Commodore Datasette	$49.75*
Commodore 1701 Colour Monitor	$499*

Programming Aids for C64

Simons Basic	$80.00*
Hes Machine lang. Monitor	$59.95*
Ozi Sprite Generators (cassette)	$19.95*
Ozi Typing Tutor (cassette)	$19.95*
Ozi Typing Tutor (Disk)	$24.95*

Computer Education

Gortek and the microchip	$50.00*
Introduction to Basic part one and two	$40.00*

Business Software for C64

Easy Script (Disk)	$100.00*
Easy Mail (Disk)	$80.00*
Easy Spell (Disk)	$80.00*
Easy Calc Result (Cartridge)	$319.00*
The Filing Assistant (Disk)	$144.00*
Personal Finance Assistant (Disk)	$119.00*
Debtors 64 (Disk)	$119.95*
Creditors 64 (Disk)	$119.95*
General Ledger 64 (Disk)	$119.95*
Masterfile 64 Ozi (Disk)	$39.95*

C64/VIC 20 Game Cartridges
Now available

Super Lander	$39.95*
Kickman	$39.95*
Sea Wolf	$39.95*
Bingo Math	$39.95*
Radar Rat Race	$39.95*
Clowns	$39.95*
Visible Solar System	$39.95*
Omega Race	$39.95*
Music Machine	$39.95*

These are just a few of our most popular progrmmes for Commodore. Come in soon and see the complete range. You still have until Nov 25th to enter Another Winning Spot Competition where you could win a Commodore 64. Entries available in store.

* All prices listed are recommended retail, including sales tax, which is exempt in some business purchases.

the Computer Spot

Shop C4 MLC Centre, Martin Place Sydney Tele: 235 2971

Shop 35 Gallery Level Eastgate Centre, Bondi Junction
Tel: 387 5208

IMAGOMAT 1092

Enter M008 on Enquiry Card

Graph technique

Techniques for the graphical representation of information by microcomputers have evolved even more rapidly than the micros themselves, if that is possible. The major, relatively current, transition which has impacted all aspects of graphics has been the move away from character cell-based graphics to full bit mapping of the screen image. Tony Smith reports:

WITHIN character cell-based graphics, a number of techniques have been used to produce the appearance of graphic images, usually with somewhat less than the apparent resolution of text characters on the same device.

Those techniques include:

- Block mode graphics, typified by the original Tandy TRS-80 model 1, with which each character cell is divided into six or eight blocks, each of which is switched on or off by a single bit of the data byte for that screen location.
- Special forms design characters, including corners and intersections of thick and thin lines, such as those defined by CHR$(179) through CHR$(218) of the 8-bit extension of ASCII character codes used on the IBM PC.
- Representation of color choices in a second byte accompanying the data byte for each screen character cell, typically with three bits giving a choice of eight colors each for foreground and background.
- Alternate use of an attribute byte to indicate switching between text and graphics, use of alternative character sets, high or low intensity (brightness), reverse image or flashing; again on a character cell basis.
- The provision for user-defined character sets which can be used equally for defining shape segments or shadings for a particular application as for alternate text character fonts.

In some ways, bit-mapped graphics can be thought of as much finer version of block-mode graphics. But there are considerable differences in the underlying methodology, with the particular effect that angled lines and other shapes appear to have the same resolution as text characters.

The first bit-mapped screen to have a wide impact on personal computing was Apple II's high-resolution screen which switches that computer from its default text mode to an alternate area of memory in which a bit map of the color screen image is stored. The Apple actually has two alternate bit map store areas as well as alternate character cell storage areas.

Rapid switching between and combination of these image areas is a key technique for some of the graphics effects achieved on the Apple II. In its simplest monochrome form, bit-mapped graphics use one bit of memory for every point on the screen to indicate whether that point is illuminated or not.

The 200 line by 640 point standard resolution of the IBM PC and even higher resolutions of the likes of Sirius I place substantial demands on computer memory. Thus such systems usually are found in micros with the 16-bit processors needed to directly address more than 64K-bytes of memory.

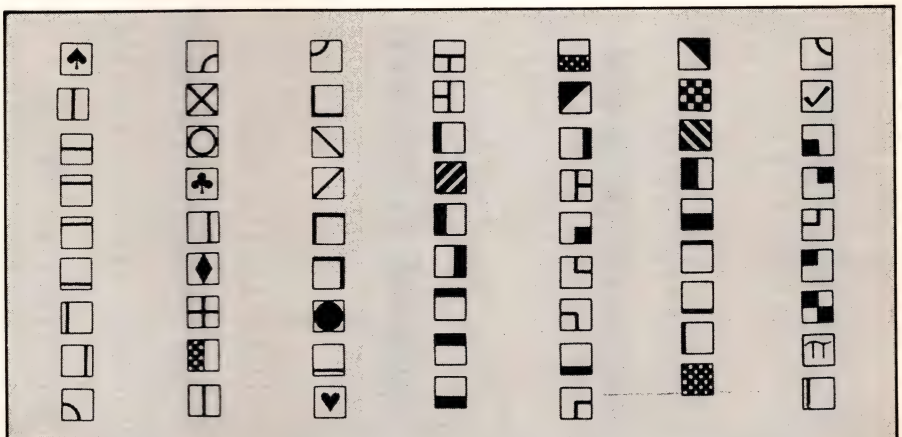
The provision of bit-mapped color or multiple intensity (grey) levels requires extra memory bits for each image dot or pixel. Two bits a pixel can give black, white or two intermediate grey shades, or four colors.

Typical sophisticated color graphics sytems use from three to eight bits a pixel to give from eight to 256 different colors. The arrangement of screen memory in the most powerful systems is into a number of planes, each of which has one bit for each pixel.

Such systems may allocate different images to different planes providing the potential for monochrome animation by rapid switching between planes containing a series of related images. A color code mapping process enables even eight-color systems to have an effectively unlimited range of colors from which to chose the limited set on display at any given time.

Such a process uses the binary value obtained from the bit planes for each pixel to index a table of finely graded intensity levels controlling the red, green and blue levels of that pixel. The image displayed may only take up a portion of the available memory in each plane, facilitating smooth scrolling in both horizontal and vertical directions by gradual change of the starting memory column and row of the "window" being displayed.

From that, it is an easy conceptual step to currently fashionable multi-windowing. On micros, the current state of the art is for multiple windows, or parts thereof, to be regenerated onto a screen single-bit map from a stored record of each window whenever a change is made to



Commodore's character generator includes a graphics character set.

V/B	G/O	V/B	G/O	V/B	G/O	V/B	HI-BIT		
							OPT	$00 or $80	BLACK
●		●		●		●		$55	VIOLET
	●		●		●			$2A	GREEN
●		●		●		●	●	$D5	BLUE
	●		●		●		●	$AA	ORANGE
●	●	●	●	●	●	●	OPT	$7F or $FF	WHITE
1	2	4	8	16	32	64	128	VALUE (DECIMAL)	

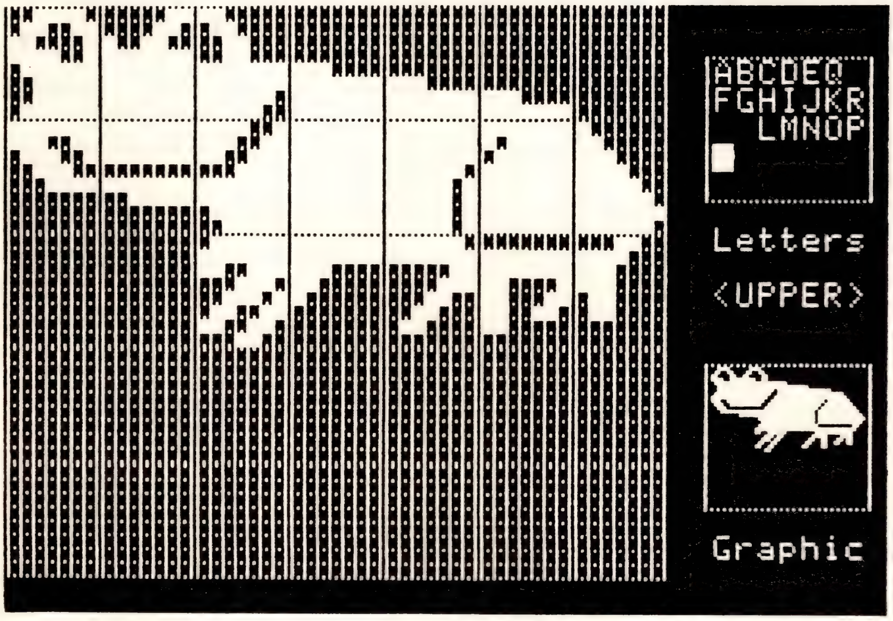
Apple uses an attribute bit to distinguish between two sets of colors. Colors cannot be mixed in the same byte. Programmers have developed sophisticated techniques to overcome the restrictions of this implementation of high-resolution color graphics.

the arrangement or content of some windows.

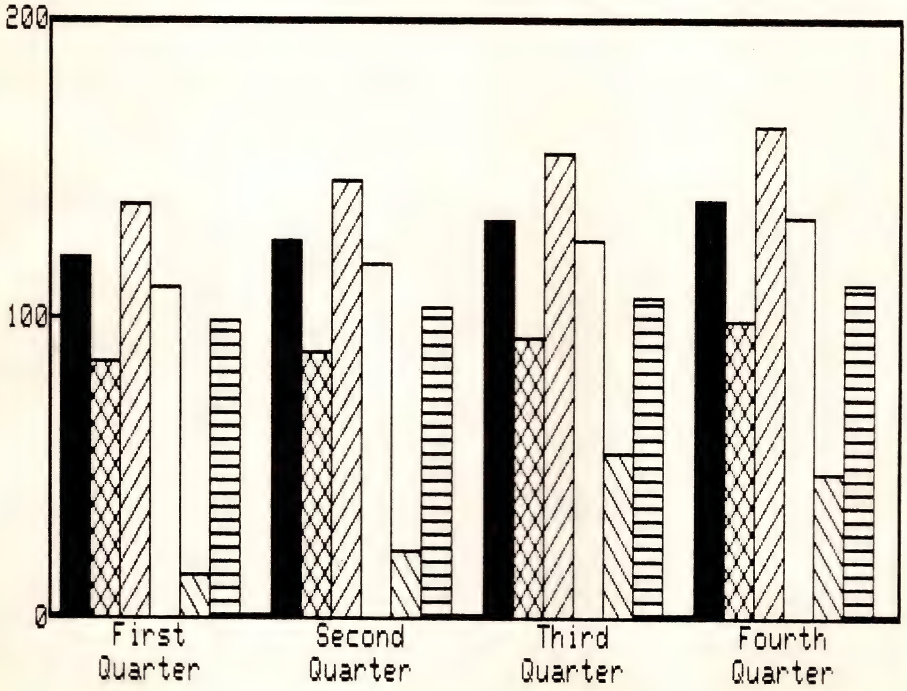
The alternative of an image generator actually able to select from multiple continuously varying window bit maps in real time is a potential area of future development. The initial step towards concurrent assembly of a screen from various separate bit-map images has been introduced initially at the bottom end of the market, with some home computers offering anything from four to 32 "sprites" — little graphic images which can be programmed to move independently about the screen, thus implementing the Logo language feature of "turtle" graphics as well as the obvious games possibilities.

The latest personal computers on which reasonably high-resolution bit-mapped graphics is available, such as Apple's Lisa and its followers, use similar concept (at first sight) of symbolic "icons" which the user moves around the screen as a representation of the actions the user requires the computer to undertake.

With current technology, icons are not facilitated by the same kind of specific hardware as is used for sprites, but are really only another window-like component of the bit map.



Creating a picture by redefining the character matrix. The picture is displayed on the screen by printing the character code associated with each cell.



Data representation

To put graphics on a screen, one of several possible programming techniques can be used:

- Direct writing of the appropriate codes to screen memory, a time-consuming process only used for very specialised applications such as arcade-style games.
- Embedding special graphics generating characters in a string written to the screen, such characters being interpreted by the screen-control software.
- Extensions to a programming language usually basic, to perform graphics functions, or use of a special language, such as Logo or Pilot, which such facilities built in.
- System calls to operating system routines which provide specialised graphics functions.

The facilities provided by graphics software sysems cover one or more of three main categories: conventional commercial graphical representations of data, line drawings, and simulated three dimensional object manipulation. The commercial graphs are generally confined to: plotting of data points against labeled axes with optional straight-line links, histograms or bar charts, and circle graphs or pie charts.

As well as plotting idividual points, two-dimensional line graphics typically provides single commands to: plot a straight line joining successive points, draw a rectangle, draw an ellipse or arc thereof, and paint (or fill, shade or color) an area of the screen bounded by previously plotted points. Various schemes to approximate free-hand drawing are provided in some systems without any real methodological concensus.

Three-dimensional graphics is generally concerned with giving points, three spatial co-ordinates and linking them so as to define edges, surfaces and, eliminating hidden lines when the object is viewed from a particular viewing angle. Image manipulation in such systems, includes rotation, magnification (zoom) and translation (pan).

Input and Output

Graphics systems demand high volumes of location specification data from their users. While most systems will accept numeric data is some form to define points, and that is perfectly suited to the commercial-type graphs, many systems utilise some specialised equipment to get position input from the user.

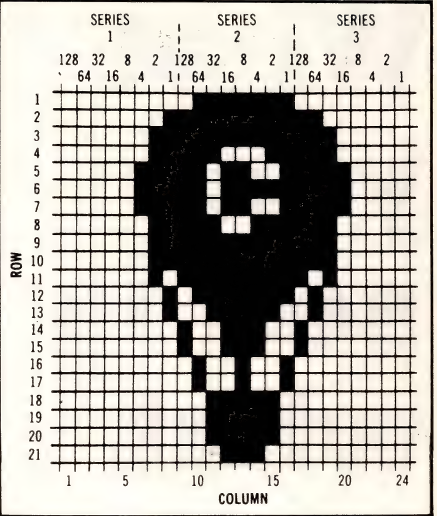
Typical systems are:

- A graphics tablet which provides the co-ordinates of a special pen as it is moved across its surface, often tracing a printed image.
- Simple analog rotational movement measurements, often used as games controllers, such as paddles which measure one quantity or joy sticks which measure two.
- The currently fashionable mouse provides measures of relative movement or absolute position on a plane, either by measuring rolling movement across a tabletop or in conjunction with some form of graphics tablet.
- Another emerging device is the track ball, which measures two rotations of a solid ball, and which is considerably more rugged than any of the other mechanical position input devices.
- More direct, but potentially arm tiring methods of locating screen position are provided by light pens and touch-sensitive screens.

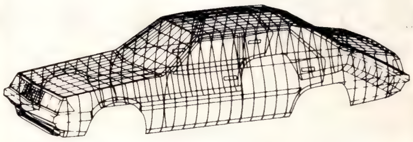
The permanent recording of computer graphics falls into three categories: plotting, photographing and computer readable storage. Photographic processes are important for quite sophisticated systems, only several of which fall within the present scope of microcomputers, and computer-readable storage is simply another class of data storage, applied to screen images, sometimes using some encoding software to reduce storage requirements.

Plotting at present generally involves high costs in at least one area, either dollars, slowness or complex driver software. It divides into the two classes of pen plotting and matrix plotting, the former often utilising quite intelligent devices which can translate a series of graphics commands into pen movements.

Still, a good picture can be worth at least a thousand words. ☐



A sprite definition matrix, treated as a moveable graphic by the C64 video interface chip.



A CAD generated image of the Mitsubishi Sigma.

Flawless performance and guaranteed until 1989

That's right! Verbatim® Datalife® flexible diskettes and minidisks offer flawless performance to ensure that your valuable data is safe. And because our Datalife range is so good, we offer a 5 year warranty — that's FIVE TIMES LONGER than industry standards. So you can be confident that when you buy Verbatim® Datalife®, you have a disk that will last.

Our name is the promise.
Our warranty is the proof.

Verbatim®

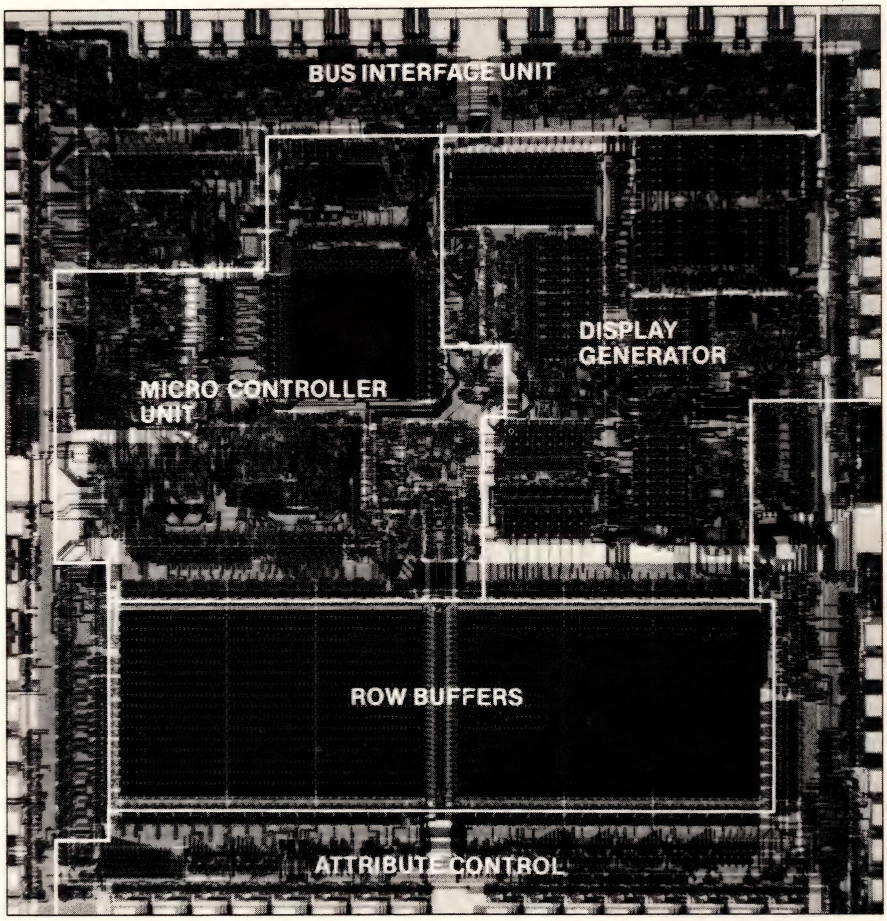
For information about Datalife® Disk, call 008 022023 from anywhere in Australia for the cost of a local call.

VTM 7

Enter M047 on Enquiry Card

What you see is what you get . . .

By John Markoff,
senior editor, InfoWorld.



Melgar Photography

The new 82730 text processor from Intel can display true "what you see is what you get" graphics, without resorting to bit-map displays.

INTEL has a surprise in store for those who think bit-mapped graphic displays are the wave of the future.

In fact, Intel, the Santa Clara, California, semiconductor maker, is on the verge of releasing a new chip that may surprise the staunchest bit-map enthusiasts.

Its designers are hardly reserved in their high-tech acclaim for the product. "It's blast-o-matic!" laughs Mark Olsen, manager of Intel product marketing for peripheral products. Olsen is talking about a high-performance, tablespoon-size silicon chip strapped onto the test bench in front of him.

In its present state, the chip looks a little like one of Dr Frankenstein's pet projects. Surrounded by oscilloscopes and logic analysers, the chip sprouts wires and probes in every direction. Above the testbed, a display reveals what's so special about this particular chip. On a white background with black type, the screen shows a business letter. Closer examination reveals that the letter is written on Intel stationary, in several different fonts, and it is signed.

Although none of this would be extraordinary when using a bit-mapped display, this is a character display. Everything on the screen is being generated by Intel's 82730 text coprocessor. The creation of the 82730 may well make possible a new generation of character screens that can accurately display text exactly as it will appear later on the printed page — right down to the writer's John Hancock.

Intel boasts that its new chip is a better solution when displaying text than the higher-resolution, bit-mapped displays, which seemingly have become the rage for new machines. For moving blocks of text — when matched against a bit-mapped display — a character screen coupled with a text coprocessor will win hands down, says Olsen.

Generally, character-based screens offer less flexibility — especially for graphics — than bit-mapped screens. Each character is formed by a pattern of dots in a rectangular matrix of fixed size. The dots are stored unalterably in a special ROM, called a character generator, and can only be displayed at certain locations on the screen.

The use of character screens necessitates a cumbersome approach to handling large blocks of text, Olsen says. The current method requires the computer to match a location on the screen to a character stored in its memory and then use the character generator to translate the binary data into the dot pattern we recognise on the screen.

If you want to move a paragraph on the screen, the computer has to recalculate, reassign and retranslate each character. Now all that may change.

In contrast, the 83730 allows the display to be changed with far less manipulation of data. By organising the display data into character strings, similar to the method used by word-processing programs to handle data, the 82730 avoids the problem of having to change a large block of memory for display modifications. Instead of moving a block of text from one position to another in a document, the 82730 modifies only tables of pointers. The use of such data organisation, called a linked-list, greatly reduces the amount of work the microprocessor must do to display information, freeing it for other tasks.

Displaying something as intricate as a signature is a trick usually reserved for bit-mapped displays, which can turn individual pixels on the screen on and off. The Intel text coprocessor achieves the same result because of its huge library of different characters. Additionally, character sets can literally be redefined on the fly. It's possible to dynamically change character sets to turn the 82730 into a flexible graphics co-processor as well.

Intel is figuring the 82730 will make character-mapped displays popular again.

Chips such as the 82730 are representative of a trend in personal-computer design that is leading toward the distribution of intelligence to different functions. In addition to its text coprocessor, Intel has math, graphics and local-area-network coprocessors.

Olsen likes to show off the original breadboard version of the 82730 to give some sense of the scale of integration achieved. The mock-up of the 82730 is contained on four, checkerboard-size, printed circuit boards, housing more than 1000 chips. All that circuitry, comprising more than 93,000 individual transistors, is now contained on a single chip.

The scale of integration is greater than on many current-generation 16-bit microprocessors. For example, the Intel 80188 has somewhere in the neighborhood of 55,000 transistors, and the firm's 80286 contains more than 135,000 transistors.

Like the better-known 8087 maths coprocessor, the 82730 is designed to take over functions from the computer's main microprocessor. The 82730 can read its instructions directly from memory to know how and where to display characters on the screen.

Not only does the text coprocessor share part of the processing burden of the CPU, but it has also been designed to perform manipulation of text at high speed. The text coprocessor sports surprising flexibility: It allows the display of tremendously expanded character sets (including Japanese kanji), superscripts and subscripts, multiple fonts, windows and differential-speed, smooth scrolling of text.

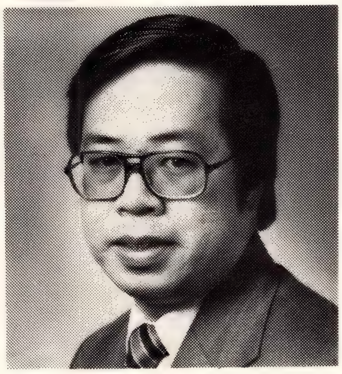
At the heart of the functions provided by the 82730 is the ability to display true "what you see is what you get" graphics without resorting to bit-map displays.

Intel has already begun shipping sample quantities of the text coprocessor and claims that production quantities will be available in the first quarter of 1984.

How soon will the 82730 be available in personal computers? Olsen won't be pinned down on specifics, but he says several systems designers are already integrating it into new designs. The text coprocessor also will show up in various other configurations. Olsen says that he's certain somebody will integrate the 83730 into a high-performance, text-processing add-in card for the IBM Personal Computer.

Already, one European teletext supplier has displayed a terminal based on the 82730. Because of its large stock of character sets (more than 15,000), the text coprocessor is ideal for videotex applications that rely on serial strings of data.

The text coprocessor is designed to be used most effectively with microcessors in the Intel family and will offer its best performance with more advanced microprocesors, such as lthe new 80186. With an interface, however, it can also be used with other microprocessors, Olsen claims. ☐



"...one of the best general accounting packages..."

WANG COMPUTERS – NATIONAL MARKETING DEPARTMENT

"The Attache software is easy to operate, yet has the inbuilt capacity to satisfy the most demanding small to medium business. Attache software is one of the country's best general accounting packages."

With these comments Wang national marketing manager Peter Wong joined other top manufacturers IBM, DEC, NEC, Toshiba, Panasonic and Hitachi in their endorsement of the Attache breakthrough in software design.

In an industry renowned for rapid change, Attache is a revolution. The new Attache concept takes software into the truly user-friendly era for the very first time.

Attache's unique software package lets you get a sophisticated commercial accounting system up and running immediately, regardless of your experience, but if you need support, you've got it. Attache is Australia's fully-supported software system.

Your complete 'software-to-go' package includes start-up kit, printed stationery, test company, well-documented manuals and live program diskettes. Neatly arranged in an attache case, of course!

A comprehensive suite of 126 programs ensures that there's one just right for you. Accounting modules may be purchased individually or you can choose from one of the business packs. Categories include accounts receivable (debtors); invoicing/sales analysis; inventory control (stock); accounts payable (creditors); general ledger and payroll.

Design compatibility eliminates duplication as your Attache system grows with you.

Attache software. It's very new and very different. Unfortunately it's not yet everywhere, so call us if your dealer doesn't stock it.

Attaché
software to go

Attache Software 275 Alfred St North Sydney
Phone 929 8700 Dealer enquiries welcome

Enter M029 on Enquiry Card

Unravelling frustrations

Microcomputer Graphics:
By Roy E. Myers.
Published by: Addison-Wesley Publishing Co. 1982. Price $13.95.

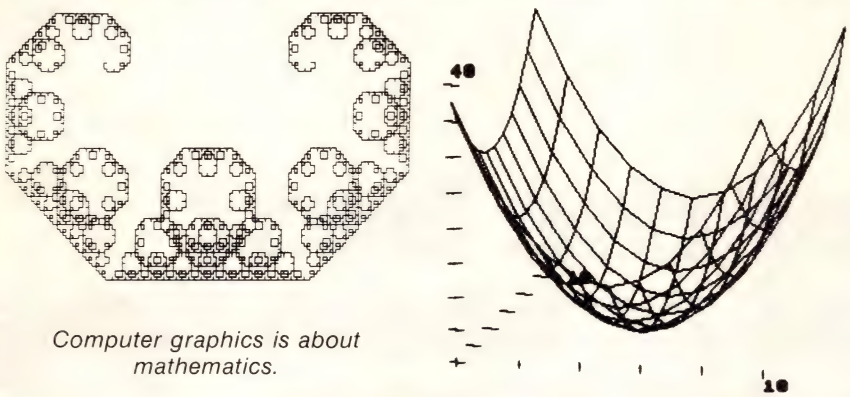
Fundamentals of Interactive Computer Graphics:
By J.D. Foley and A. Van Dam.
Published by: Addison-Wesley Publishing Co. 1982. Price $34.95.

Reviews by John Hughes.

MOST microcomputer users find mathematics the frustrating thing about computer graphics. Fundamentally, computer graphics is about mathematics.

A programmer can go only so far with HGR and HPLOT. He or she can master POKEs, and use shape tables, even succeed in animation.

But ultimately, the micro owner is constrained to the two-domensional screen world provided by the manufacturer or the software package author.



Computer graphics is about mathematics.

To push back the limits of the world of microcomputer graphics means the programmer has to learn about clipping and viewports, about matrices, translation, rotation and scaling — about three-dimensional representation of objects, projections, viewports and perspectives.

Ultimately, programmers must learn about hidden lines and hidden surfaces.

These two books provide support for those who want to break out and discover more of the potential of computer graphics — albeit from different ends of the "sophistication" spectrum. Myers' book is aimed at the microcomputer user.

In fact, it could be said, at the Apple II user. While pointing out that the phrase "computer graphics" does not have the same meaning to all, he develops the concepts of graphics in a sound and orderly manner, from an initial series of examples of bouncing balls and moire patterns, through a discussion of the graphics characteristics of the Apple II to the software tools necessary for handling two and three dimensional graphics.

Myers doesn't shrink from the task of describing matrices to the non-mathematician. He recognises that they are essential to the graphical representation of 2D and 3D objects, and in Part III introduces a gradual development of their use in graphics.

The outstanding feature of the book, though, is the number of examples. Some 80, Basic programs are spread throughout the text illustrating nearly every major graphics technique discussed.

These also are available on diskette for the Apple II (as well as some machine-level programs). Anyone with a microcomputer and an interest in graphics would gain considerably even by working through and running the many programs in the book (while the programs are written for the Apple II, most could be adapted readily for any micro). Myers' book explicitly addresses the microcomputer field.

The second book is aimed at users of much more sophisticated hardware, though of course, many of the principles are the same. *Fundamentals of Interactive Computer Graphics* by Foley and Van Dam rightly can lay claim to being the standard introductory reference in computer graphics.

It is a modern and comprehensive overview of the subject. The book covers much the same scope as does Myers' book, but in considerably more detail — and in a much more rigorous and formal style.

All major algorithms and techniques are discussed in detail, and the text is supported amply by photos and color plates. It is always these color pictures, which show just how far computer graphics has progressed, that excite the imagination.

Throughout the book, Pascal procedures are used to implement the algorithms described, and examples are chosen from a wide range of applications. The only area that consistently misses out in such major graphics texts (and perhaps rightly so) is image processing.

The book is designed in such a way that a reader can progress through the basics, the mathematics of graphics, data structures and display architectures to making realistic synthetic photographs. This in general equires much more from the hardware than most microcomputers can provide, and the average personal computer user would find the text daunting.

It is a text book, and a very good one. Those who might contemplate pursuing computer graphics as a career certainly will come across this book.

So here are the boundaries of computer graphics. The vision of Foley and Van Dam's book, and the opportunity for making at least some of that a reality for the micro user.

"Well, there's your problem."

Education advice

BILL Marwood, once the NSW Education Department's strategist for the introduction of computing into the NSW education system and still responsible for advising the department on some of their administration data processing needs has been reported as saying that he still intends dragging NSW schools computing into the 20th Century.

IBM drops 4in

IBM has dropped its ill-conceived 4in disk drive from production, citing a lack of market acceptance. This means the 3.5in disk is likely to become the standard.

IBM is expected to standardise on 5¼in drives for all its personal computers.

Adam cloaked

DON'T count on an early release of Coleco's Adam home computer early next year. Coleco had been showing Adam systems throughout October, but not letting anyone actually use the systems.

At the end of October, Coleco announced it had started to distribute the product. Industry analysts have become skeptical of Coleco's claims about the number of systems it intends to ship before Christmas.

Seems they've heard it all before.

Apple disks

NEW disk products for the Apple IIe are a feature of the avalanche of new products Apple will announce next year. The recently announced NSW schools contract includes the Unifile and Duofile disk systems previously announced for the Apple III when Lisa was launched.

These 800K capacity drives are priced below the existing 140K disk drive. A 10M-byte version of the Profile hard disk is also on contract at slightly more than $A2000. With the imminent release of Prodos for the Apple IIe, this storage should calm the frustration of many Apple programmers.

IBM cranks up

INTERNATIONAL Resource Development Inc president Kenneth Bosomworth, predicts IBM will ship 2 million PCs worldwide next year. But Bosomworth does not expect IBM shipments to meet demand until 1985 when it starts shipping 3 million PCs a year.

IRD's figures are based on interviews with the manufacturers of PC subsystems and parts. Here's the breakdown.

IBM is cranking out 65,000 PCs a month. By early next year it will be shipping 100,000 units a month, and by late next year, it will be shipping at a rate of 250,000 units a month or more, for a total of 2 million PCs next year.

GSX-86

(Continued from page 97)

concerned with setting drawing parameters from line color to text font, while several are concerned with accepting data from input devices or out of screen memory.

The likely use and development of GSX can be implied from some quotes from Page 21 of the Programmer's Guide: "You can write your application programs in assembly language (or a high-level language that supports the GSX-86 calling conventions) with appropriate calls to GDOS. You can compile/assemble and link programs containing GSX-86 calls in the normal manner.

"GSX-86 also supports high-level language graphics interfaces. GSS-Kernel is a graphics application library based on the Graphics Kernal System, level OA, a draft international graphics standard. GSS-Kernel supports high-level languages with standard graphics procedure calls.

"GSS-Plot is a high-level programming tool that helps you produce graphs and plots with just a few calls from a high-level language."

GSX-86 is supplied with the GIOS for a range of devices, including:

■ Terminals such as Adds Viewpoint, Datamedia Colorscan-10, Lear Siegler ADM5, TeleVideo 910 and DEC VT-100, all with Digital Engineering retrographics.

■ Plotters from Hewlett-Packard, Houston Instruments and Strobe.

■ Printers such as Epson MX-80, Prism and Micro Prism, Okidata Microline and Printronix.

BASF
BASF
MAGNETIC COMPUTER MEDIA
PERIMEDIA: (03) 347 7416

"THE PORTABLE CLASSROOM"

for

PROFESSIONAL
COMPUTER
TRAINING

■ COMPUTER CONCEPTS
■ SYSTEM DEVELOPMENT
■ COBOL TRAINING
■ CP/M 2.2
■ MICROSOFT BASIC
■ PASCAL
■ CIS-COBOL

FOR FURTHER DETAILS CONTACT

ATS
COMPUTER
EDUCATION

21 Joyce Ave,
Glen Waverley 3150
Australia.

(03) 579 4458

Enter M060 on Enquiry Card

Peanut rumors grinding on

JOHN DVORAK, of InfoWorld, has been investigating a story published in the US in Hal Hardenburg's *DJACK Grounded* newsletter.

"There are a few chip designers and sellers at Intel (the rumor goes) who would like to shoot Bill Gates right now. It seems the Microsoft folks can't read, and as a result Intel has a large pile of 80188s it can't ship. And Intel is redesigning the 80188 chip. Again.

"It's like this: the 8088 spec sheet reserves two of the 256 jump vector addresses for future Intel use. Microsoft went ahead and used them in the MS-DOS operating system anyway.

The large pile of 80188s that Intel can't ship use those two reserved vectors for a hardware purpose. Understand, now, Intel was right and Microsoft was wrong.

And: true, Microsoft could modify MS-DOS to comply, retroactively, with Intel's entirely correct documentation.

"Unfortunately, there are about 12,000 application programs sitting on computer retailers' shelves all over the country (that) call those vectors . . . It would seem that in this case, Intel's substantial software support backfired.

"Since Intel's documentation scrupulously documented that those two vectors are reserved, [it is] (the rumor goes) refusing to take back the 80188s it has sold, unless (the rumor continues) the customer uses a blue logo with three alphabetic characters.

"And now you know why Peanut has not been shipped yet, and what CPU Peanut uses. We wonder how long it will take Intel to change the mask — again — and get the chip back into production — again.

"And you also know why the Intel folks would like to shoot Bill Gates (if the rumor is correct).

Here are the facts:

"The following information was gathered from the Intel APX 86/88, 186/188 Users Manual, Intel No. 210912-001, pages 4-10 and 5-5; and from the IBM PC XT Technical Reference Manual, pages 2-4. Pages 4-10 shows that the 8088 has five dedicated interrupt pointers (No. 0-No.4), 27 reserved interrupt pointers (No.5-No.31), and 224 (user) available interrupt pointers (No. 32-No. 255).

"Page 2-4 of the IBM manual reveals that MS-DOS uses 25 of those 27 reserved interrupt vectors. Specifically, MS-DOS uses No. 5 as a vector for the array bounds exception, and also vectors No. 6 through No. 15 and No. 18 and No. 19. Which means that MS-DOS programs will NOT, in general, run on the 80186/8.

"We are told that the better the program, the more likely that those MS-DOS vectors are being used at the application level.

"The fact is that the 80186/8 is a very cost-effective chip at the hardware system level, as we have reported before. It is highly logical that IBM would, given enough lead time, sell the 80188 in a highly cost-sensitive device such as a home computer.

Let us assume that this tiny, trifling conflict was discovered very late in the design cycle for Peanut (in large companies, the hardware and software types sometimes don't communicate well).

We can think of four ways out of the dilemma:

- Cancel Peanut.
- Re-design Peanut to use the 8088 (an expensive and time-consuming alternative involving a complete re-layout of the main circuit board)
- Go to market with a product that won't run all those MS-DOS-based PC programs out there.
- Get the company [that] you own a large piece of to take back all those 188 chips IBM (may) have bought and re-redesign the 188 to conform to MS-DOS. This is also time-consuming but the expense is placed elsewhere."

Now that's a *heck of a story*. I checked out the references, and everything seems correct. So it's pretty obvious that, because of this dilemma and a certain *shortage* of 80188 chips, the IBM first-generation home computers will be 8088-based.

Finger on the pulse

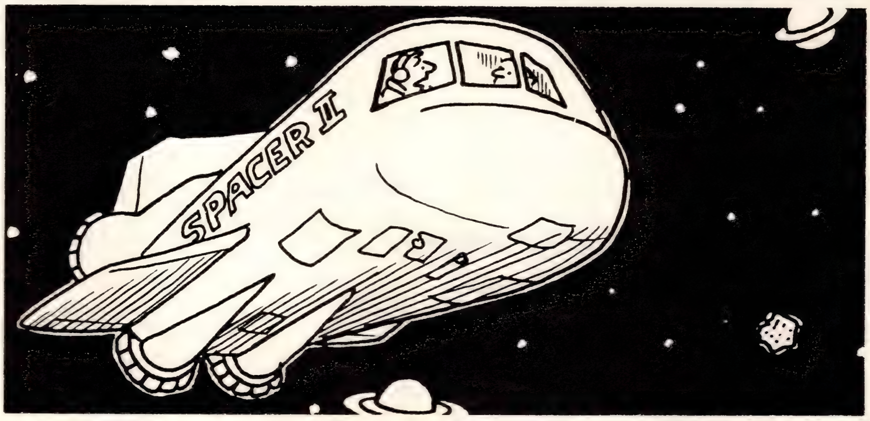
BILL Coggshall, a founder of Dataquest and now president of Software Access International, says his company is ready to release its preliminary findings on the US microcomputer software market. The numbers, he says, are likely to surprise many people — they are somewhat lower than most other companies have been predicting.

For one thing, Coggshall says his company doesn't see as much future in educational software as it does for home productivity tools, and sees a price fall that will keep overall sales figures down, too. Among his findings: The 1987 software market will be about $US5.4 billion on sales of 88.5 million units, up from last year's $US994 million on 10.5 million units.

The biggest categories by dollar in 1987; productivity, $US2 billion; entertainment $US821 million; systems software, $US817 million. Education checks in at only $US353 million on 12.2 million units.

The average unit price will drop to something like $US60, and the average buyer will buy between $US200 (home) and $US750 (business) worth of software within a year after the hardware purchase. The channels of distribution with the biggest pieces of the pie this year: computer specialty stores and hardware manufacturers.

He also lists his "Top 10" publishers (Microsoft tops it at $US70 million, followed by Visicorp at $US50 million, DRI at $US45 million, Micropro at $US40 million, and Lotus at $US37 million); his top five distributors (Softsel, $US64 million, SKU, $US45 million, Softteam $US30 million, MicroD, $US25 million, and Software Distribution Services, $US20 million); and his top five retailers (Tandy and Computerland tie for $US100 million each, followed by Software Centres at $US20 million). ☐



"We have to go back — our software license has expired!"

"Terrific report. You really have a way with words."

"Well done!"

The VisiWord™ program for the IBM® Personal Computer can help you make the most of every writing opportunity.

It can help you write more effectively. Because it's designed with the needs of the business professional in mind.

It will also help you and your staff work more productively, because the VisiWord program has all the word processing functions your secretary or assistant needs.

You'll find the VisiWord program easy to learn, simple to use. And everytime you use it, you'll be pleased by how much less effort it takes to produce memos, letters, proposals and reports that reflect your very best efforts.

Writing, editing and printing your thoughts are done in a single process that's fast—without waiting for typing and retyping. And your results may be even more professional-looking because what you see on your screen is exactly what you get in your final printed result.

Better yet, you can also enhance results in other areas of your work. Because the VisiWord program works with the VisiCalc,® VisiSpell,™ and six other VisiSeries™ programs.

The VisiWord program also works for the future.

VisiWord leads to VisiON™

To make sure that the VisiWord program helps you today and tomorrow, we're making it an upgradable part of our revolutionary VisiON integrated software system of the near future.

See a demonstration of the VisiWord program at a nearby retail computer store.

VisiWord!

VISICORP™

APPROVED SOFTWARE

IMAGINEERING

579 Harris Street, Ultimo
Sydney NSW 2007 (02) 212 1411

©1983 VisiCorp. IBM is a trademark of International Business Machines Corporation.

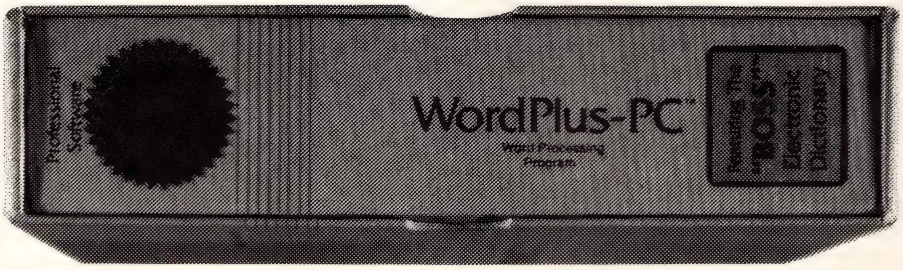
Enter M065 on Enquiry Card

Soft Solutions for Hard Times

Business is tough today. Tougher than it has been for years. That's why you need all the help available to you just to maintain that competitive edge. Computers offer a new world of management advantages and profit-oriented insights. But you've heard and read that a computer is only as good as the software running on it. And software means hiring expensive programmers to custom-design a suite of applications for your company or firm. Right?

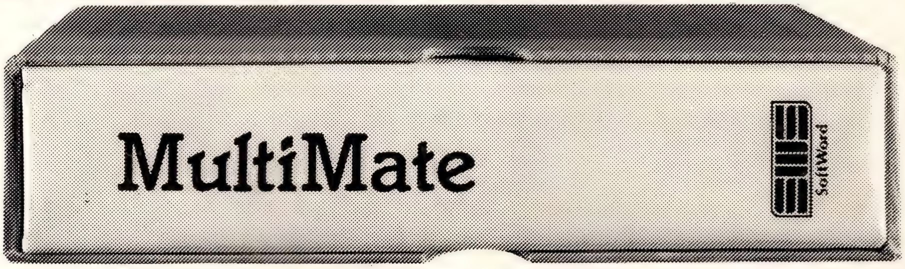
Wrong. The microcomputer revolution has brought some pretty big changes. Including a revolutionary new approach to business software. Today more and more off-the-shelf business software packages are available. For a broad and increasing range of businesses. Including yours.

At SCA we have scoured the world's software centres. And we have introduced into Australia a range of ready made, flexible computer software for business. Primarily designed to run on the successful IBM Personal Computer and other 16-bit microcomputers.



If word processing is a new concept for you, then WordPlus-PC may be just the right approach. One of America's most successful word processing packages and one of the easiest to use, WordPlus-PC includes a powerful merge capability which allows you to send personalised standard letters to large numbers of addressees. As well as a complete range of sophisticated word processing functions, WordPlus-PC is also available with The Boss, a unique on-line spelling check function containing an electronic dictionary of more than 90,000 words. Have your dealer demonstrate to you the power of WordPlus-PC featuring The Boss. Now available for the DEC Rainbow and the Texas Instruments Professional as well as the IBM Personal Computer. RRP (excl. sales tax) WordPlus-PC $395. WordPlus-PC featuring The Boss $525.

Data base management used to be confined to professional programmers. But with DBM II, an inexperienced computer user can prepare comprehensive and detailed reports on all aspects of his business. For example, using DBM II and your IBM PC, figures computed on your spreadsheet can be put into on-screen forms which you design, then printed out in the form of personalised letters using your word processor. DBM II is completely compatible with Lotus 1-2-3, MultiPlan, VisiCalc, WordStar, WordPlus-PC and other leading programs. DBM II is designed to be operated by non-technical users and does away completely with hard to remember codes. It's menu oriented and thoroughly and concisely documented. RRP (excl. sales tax) $395.



If you love your IBM PC but still look covetously at your neighbour's Wang word processor; if you wish you could identify and move a block of copy about as fast as you could point to a "before" and "after"; if you want to zip from page 78 of a document to page 4 in only three key strokes; then MultiMate is for you. MultiMate was designed to bring Wang-like dedicated word processor power to IBM PC. For professional word processing, it's MultiMate. RRP (excl. sales tax) $595.

Computerising can be a difficult process. That's why we have ensured that all SCA products are well documented, ready to run and easy to use. But if you do strike trouble, our Customer Support Hotline is just a phone call away. At SCA we offer a full range of customer support services, all designed to ensure that you get the maximum possible benefits from your SCA product. As a registered SCA product owner, you will have access to

1. the SCA Product Upgrade Plan that enables you to buy new versions of your product when they are introduced at a special upgrade price;
2. the SCA Product Replacement Plan that allows you to replace defective products after the warranty period at a small charge;
3. SCA's Customer Support Hotline.

If you want some more information about what SCA's fine software can do for you, it's yours for the asking. Just telephone or send us your business card. SCA products are available from selected computer dealers throughout Australia. Call us for the location of the dealer nearest you.

SCA

Productivity tools for Australian business.

SCA SOFTWARE CORPORATION OF AUSTRALIA PTY. LTD.,
449 Swanston Street, Melbourne, 3000.
Telephone (03) 347 7011. Telex AA30458.
New York Office (212) 846 1142.

Enter M019 on Enquiry Card

Dewhirst board

THE Dewhirst Corp has released the CPU board and a memory board for their Data Base Machine. The boards have been designed for high data throughput in a shared bus IEEE-696 system using DMA techniques. The CPU card uses multiwire technology and features a 1K-byte-deep cache with diagnostic registers. A real-time clock, bootstrap ROM, memory management unit and vectored interrupt controller are included on the CPU card. The IEEE-696 memory card contains 44K, 64K or 265K dynamic RAM chips offering 256K and 1M-byte capacities with error correction circuitry that can detect and correct single bit errors. The card will sell for $A2550.

Further information: Dewhirst Corp, 428 St Kilda Rd, Melbourne, Vic, 3000. Tel: (03) 267 5877.

Enter M500 on Enquiry Card

Total Solution

CONTROL Data Australia has released a microcomputer package called the Total Solution. The offering provides an advanced new microcomputer, a total range of products and services needed by the micro user, and the ability to "hook" the micro into the huge computing power of Control Data's large Cyber mainframes at its Australian Computing Centre in Victoria. To cap off this product and service offering, Control Data will allow customers to rent their entire micro-computer needs under one simple contract and from one supplier. Included in the Total Solution is a new microcomputer, the CRS-100, complete with Control Data's touch-sensitive screen, coupled with services including on-call maintenance and access to CDA's consultants, as well as a complete range of self-teach Plato education courseware. The one-year-minimum rental contract includes a year's supply of disks, ribbons and paper.

Further information: Control Data Australia Pty Ltd, 22 Miller St, Nth Sydney 2060. Tel: (02) 268 9500.

Enter M501 on Enquiry Card

Sanyo's answer

SANYO Data Systems Pty Ltd has announced it will launch its answer to IBM's Personal Computer in December this year. The MBC 555 features an 8088 16-bit processor and 128K-bytes of memory, expandable up to 256K-bytes. The computer's 32K-bytes of video RAM means the MBC 555 also can provide high-resolution graphics (640 x 200 dots) when using the optional high-resolution monitor. Dual disk drives give 320K-bytes of disk storage and an additional 320K-byte option will be available erly next year.

The MBC 555 is the first of three new computers to be launched by Sanyo towards the end of this year.

Further information: Sanyo Data Systems, 122 Walker St, North Sydney, NSW, 2060. Tel: (02) 929 4644.

Enter M502 on Enquiry Card

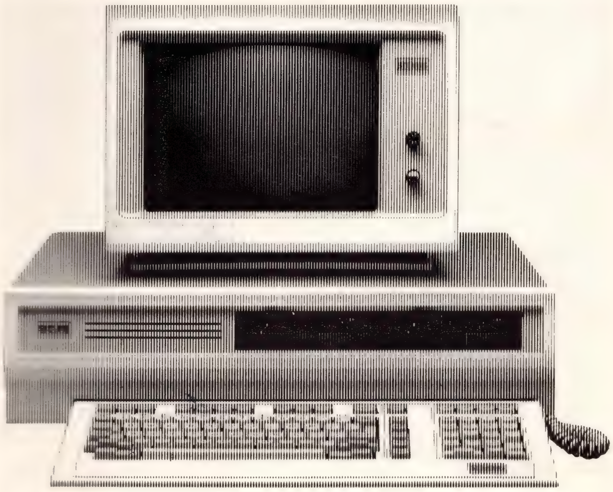
8-bit PC

DATA Peripherals Inc has introduced a low-cost 8-bit CP/M-based personal computer equipped with a high-capacity Winchester disk drive and powerful graphics functions. The TS803H features a half-height 5¼in Winchester disk drive with 10M-bytes of storage along with a 500K-byte half-height 5¼in floppy disk drive. The new computer is based on the Z80A microprocessor and has 64K-bytes of RAM, expandable to 128K. The TS803H package includes three software applications, as well: Telewrite (word processing), Telecalc (electronic spread sheet) and Telechart (business graphics).

Further information: Data Peripherals Pty Ltd, 9 Avon Rd, Nth Ryde, NSW Tel: (02) 888 57333.

Enter M519 on Enquiry Card

Networking specifics



THE Stearns Desktop Computer, a PC-MS-DOS, or IBM-compatible machine designed specifically for networking, has been released by Insystems The Stearns has inbuilt communication links, 8086 CPU operating at 8MHz, with an 8087 arithmetical co-processor, MS/DOS or Concurrent CP/M86 operating systems. The system is expandable, with extra floppy or hard disk drives — up to 40M-bytes with 128K of RAM expandable to 896K, RS232 interface, 2-4 additional synchronous or asynchronous RS422 channels and 3270 bisync and/or 3270 SNA/SDLC communications. The system also has Teletex communications, automatic dial up for host access, user defined data translation and up to 12 direct memory access channels. Cluster levels can run to 5 users at the first level, and 32 at the second. Each cluster can be linked infinitely with other clusters, all of which have gateways to Ethernet and Wangnet. All data and peripherals can be shared by each station in the cluster, which are connected by twisted pair wiring.

Further information: Insystems, 337 Moray St, South Melbourne, Vic, 3205. Tel: (03) 690 2899.

Enter M505 on Enquiry Card

Professional TelePorta

DATA Peripherals has unveiled TelePorta, the so-called professional's protable from TeleVideo Systems Inc, The TelePorta is a new complete portable computer weighing 12kg. It incorporates as standard: two 500K-byte floppy disks, 9in amber screen, business-quality graphics with high-resolution of 640 x 240 pixels and a SuperMouse port. TelePorta also incorporates Telesolutions 80 software. Teleporta is priced at $US2995 plus tax.

Further information: Data Peripherals Pty Ltd, 9 Avon Road, Nth Ryde, NSW 2113. Tel: (02) 888 5733.

Enter M520 on Enquiry Card

Sharp's home entry

THE Sharp entry into the Australian market has been designated the MZ 700 series. The first machine to be released is the MZ721, a computer designed for the family, with a full-sized keyboard, four-direction cursor control keys and seven programmable function keys. The MZ721 is based on a Z80A processor with 64K RAM. The Sharp MZ721 has three display outputs allowing it to be connected to either a home colour TV (UHF 36), a composite video monitor or an R.G.B. color mid-resolution computer monitor.

Further information: Sharp Corporation, 64 Seville Rd, Fairfield, NSW, 2165. Tel: (02) 728 9111.

Enter M521 on Enquiry Card

Single Board Kit

THE Australian-designed compact Single Board Computer on the STD bus, known as the little big board, is now available in kit form. Provided on board is 64K of RAM, real time clock and calendar which is battery backed, RS232 I/O ports, disk controller for 8in or 5in disk drives and 2K Eprom.

Further information: Pulsar Electronics, 2 Melrose Drive, Tullamarine, Vic, 3043. Telephone: (03) 330 2555.

Enter M503 on Enquiry Card

BASF
MAGNETIC COMPUTER MEDIA
PERIMEDIA: (03) 347 7416

Wyse local release

The WY-300 from MPA.

MICROPROCESSOR Applications has released the locally assembled Wyse WY-300 color terminal. The WY-300 offers all the features of the WY-100, plus full color. It is designed to operate in WY-100 mode and WY-300 is a smart editing character-oriented video display which displays data in eight colors on the CRT screen. It also contains a soft character generator into which up to 256 custom symbols may be loaded from the host computer. Key features of the WY-300 are: clear, 80-col high-resolution eight-color display; hidden color attributes; extensive alphanumeric and line drawing symbols; soft downloadable character generator; compact ergonomic design with swivel and tilt CRT and detched keyboard; text editing and forms data entry functions; 105 key keyboard; two independent RS232 ports to 19.2 Kbd; soft key codes.

Further information: Microprocessor Applications, 48 Rutland Road, Box Hill, Vic, 3128. Tel: (03) 890 0277.

Enter M509 on Enquiry Card

Price cutting

DIGITAL Equipment Corp (Australia) lowered the price on the 192K-byte RAM option for its Rainbow 100 personal computer 40 per cent from $A1,300 to $A770. Lotus 1-2-3 and concurrent CP/M are examples of software products announced by third-party vendors which provide greater functionality that can be accommodated in the Rainbow system's standard 64K memory configuration. *Further informtion:* Digital Equipment Corp (Australia), Chatswood Plaza, Railway Pde, Chatswood, NSW 2067. Telephone: (02) 412 5252.

Enter M510 on Enquiry Card

IBM in color

B.S. Microcomp has released the Colorplus board for the IBM Personal Computer. Users can select high resolution graphics (640 x 200 pixels) in four colors, or medium resolution (320 x 200 pixels) in 16 colors. By comparison, the IBM color monitor adapter is limited to four color at medium resolution. The board features a parallel printer port to reduce the requirement for an additional expansion slot. It also comes with the Draughtsman for Colorplus software, a menu driven user friendly general purpose graphics package. Videotex is supported by software from Wolfdata which runs in conjunction with the Colorplus board. This is the first product in the market aimed at turning the IBM Personal Computer into a color videotex terminal. A full videotex editing system soon will be released which will allow the user to create colorful displays quickly and easily. The Wolfdata color videotex system is compatible with any larger mainframe based system that uses the Prestel format.

Further information: B.S. Microcomp, 561 Bourke St, Melbourne, Vic, 3000. Tel: (03) 614 1433.

Enter M511 on Enquiry Card

Timing analyser

GOULD Inc's design and test division has announced an integrated timing analyser (ITA) component for its model 9516/16S microsystem integration station. Gould's integrated timing analyser operates at clock rates as high as 100mHz to measure pulses as fast as 10 nanoseconds. It detects glitches (sporadic, unintended pulses) as fast as 5ns, Gould says. An ITA consists of a printed circuit board and an eight-channel probe pod. Each 9516/16S can accommodate up to two ITAs for up to 16 channels of simultaneous sampling. Users can capture up to 1,024 samples a channel, then display the results in waveform format on the 9501 terminal's CRT screen. The 9516/16S is designed for hardware and software-integration as well as debugging of 8- and 16-bit microprocessor-based systems. *Further information:* Elmeasco Instruments Pty Ltd, 15 McDonald St, Mortlake, NSW 2137. Tel: (02) 736 2888.

Enter M512 on Enquiry Card

Supermouse

DATA Peripherals has introduced a low-cost optical Supermouse from TeleVideo Systems Inc for it's 8-bit and 16-bit business computer systems. Priced at $A275 the Supermouse saves time by allowing a user to manipulate data displayed on a computer CRT without using keyboard commands. Data Peripherals says Supermouse is the lowest-priced pointing device on the market. It is fully supported on TeleVideo Systems Teleporta, TS 803, TS 1603 and TS 1602H computers. A new package called Teledraw 80 which uses the mouse is now available for use with the TelePorta and TS 803 systems. This package is priced at $A395 plus tax and allows the user to draw bar charts, line graphs, pie charts as well as free-hand arcs, lines, polygons, etc.

Further information: Data Peripherals Pty Ltd, 9 Avon Road, Nth Ryde, NSW 2113. Telephone: (02) 888 5733.

Enter M513 on Enquiry Card

Five Stars

CASE Communication Systems has released five new dot-matrix printers in its Star range. Operating at speeds from 60 char/sec to 160 char/sec, the new models are priced at $A295 for 60 char/-sec, $A595 for 120 char/sec and $A795 for 160 char/sec versions. The printers include correspondence-quality, type graphics and thermal printing capabilities. Both 80 and 136-column width versions are available supporting tractor, friction and single sheet paper feed. High-resolution block and bit-image graphics are provided. Normal, dual and quadruple density modes provide resolutions of up to 240 dots an inch. The new Stars are available with Serial RS 232 and Centronics compatible interfaces.

Further information: Case Communication Systems, 1-3 Rodborough Rd, Frenchs Forest, NSW, 2086. Tel: (02) 451 6655.

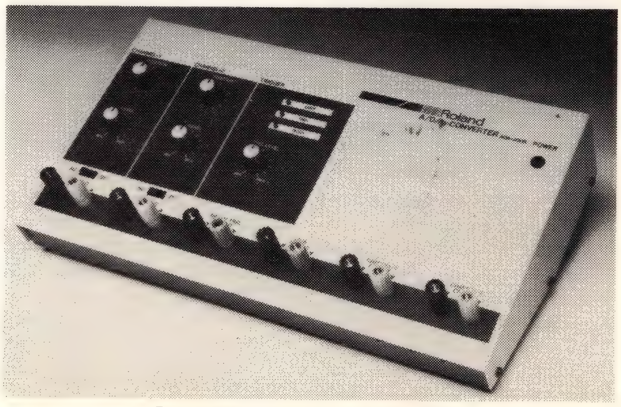
Enter M514 on Enquiry Card

Roland's low-cost conversions

A LOW-cost general purpose analog to digital convertor that reconfigures under software to digital to analog, has been released in Australia by Roland Corp. The unit is software programmable for the two input and output channels, and a sweep trigger can be set to fire when the channel 1 input level exceeds a pre-set value. This trigger may be used to synchronise the action of external equipment. The A-D and D-A mode are selected by software switch, and the convertor produces an 8-bit parallel binary stream at a maximum sampling rate of 44kHz. Full circuitry and software information is supplied with the package to enable a user to modify them for adaption to a wide range of functions. The unit is fitted with input and output filters to prevent aliasing, and for smoothing the staircase wave output. Controls include input amplification levels and DC bias of input signals, AC/DC input selector switch and sweep trigger level.

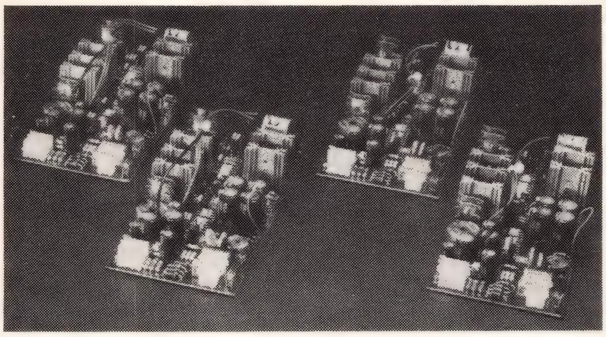
Further information: Roland Corp, 23 Cross St, Brookvale, NSW, 2100. Tel: (02) 938 9911.

Enter M515 on Enquiry Card



Roland's A-D/D-A converter

Reliable power supplies



Power supply family for micros.

THE SM80 series of power supplies from Australian manufacturer, Scientific Electronics, is said to offer features needed by the micro designer — low cost and small size coupled with high performance and reliability. These open frame power supplies — the SM80AE1, 2 and 3 have all been designed and manufactured by Scientific Electronics in Australia to meet Telecom specification 1302. All are rated at 80 watts, the model 1 being 5 rail, model 2-4 rail and model 3-6 rail. All three units offer standard output rails as well as output rails to customer specifications. All outputs are short circuit protected and total allowable power is 80 watt continuous = 150 watt peak. Isolation is greater than 3.5KV and efficiency greater than 60 per cent at full load.

Further information: Scientific Electronics, 6 Holloway Drive, Bayswater, Vic, Tel: (03) 762 5777.

Enter M516 on Enquiry Card

A musical note

THE Roland Corp, one of the world's leading manufacturers of high-tech synthesisers, electronic keyboards and other professional musical equipment, aims to make its presence felt in computers, specifically in the peripherals area. The company's first product in the peripherals market, the Amdek monochrome monitor, is recognised as a top seller in the US. More recently, Roland has released its A/D/A converter, the 14in color monitor and eight-pen and one-pen plotter range.

Further information: Roland Corp Australia, 39 Victoria Street, Fitzroy, Vic 3065. Tel: (03) 417 1800.

Enter M517 on Enquiry Card

Time Spectrum

IMAGINEERING's Persyst Time Spectrum, a powerful, expandable multi-function board with up to 512K of RAM, features a rechargeable battery back-up for calendar clock and 'Wait less' printer spooler. The DCP/88, a front-end communications processor for the IBM PC or XT, utilises the Intel 8088 microprocessor. Features include independent program execution, modem and high-speed printer support and two or four channel serial communications. The Persyst PC/HASP supports remote job entry communications operations commonly found in corporate data processing environments. Features include concurrent support of up to seven multileaved I/0 job streams when linked to the DCP/88 expansion board; send and receive user-defined data files and incoming straems which may be spooled to different devices.

Further information: Imagineering, PO Box 558, Broadway, NSW 2007. Telephone: (02) I212 1411.

Enter M518 on Enquiry Card

Smart Cable

ATAC Dataprocessing has released the Smart Cable, an intelligent RS232 cable. The smart cable will analyse the signal levels on the cable connecting RS232 interfaces and make the correct connections.

Further information: ATAC Dataprocessing Pty Ltd, 55 Lavender Street, Milsons Point, NSW 2061. Tel: (02) 436 2477.

Enter M537 on Enquiry Card

Get the best from your first microcomputer

WESTERN AUSTRALIANS get 3 HOURS FREE TUITION

When you suddenly realize that learning how to operate your computer is going to take more effort than you initially thought, COMPUTER AGE is here to help you. You're not left out in the cold . . . with your IBM Personal Computer from Computer Age. We provide the necessary support you need, when you need it. Between now and Christmas, with your IBM PC or IBM XT computer system purchased from us, you get 3 hours free tuition. We teach you how to get started, explain how to use your computer effectively and help you to learn to use your first program . . .

TO GET THE BEST FROM YOUR MICROCOMPUTER!

A full range of IBM Personal Computer systems for business and personal use, accessories, and computer programs are available.

Discover the answers to your questions, and chart your course for the future.

COMPUTER AGE
Shop 3, 355 Stirling Highway, Claremont, WA 6010
(09) 384 1111

Enter M045 on Enquiry Card

DataTree cleans up

A SELF-contained mobile microcomputer workstation, the PC WorkTree, has been released by Australian ergonomic furniture manufacturer Data Decor. The DataTree personal computer workstation has been designed to allow a microcomputer system and its peripherals to be kept as a self-contained and mobile unit. DataTree has separate levels for the computer and keyboard, visual monitor and disk drives, and printer. Further storage is provided for diskettes, manuals and printouts under the main work surface. The DataTree is available in a range of colors and is suitable for Apple, IBM PC, Sirius, Xerox, Commodore, Sord, ICL, Medfly, NEC, Dot, Columbia, Franklin and other similar computer systems.

Further information: Data Decor, Waterloo Place, Richmond, Vic, 3121. Tel: (03) 429 9488.

Enter M504 on Enquiry Card

The DataTree

Tandy's offerings

TANDY Australia Ltd has announced a variety of services to be offered to subscribers of The Australian Beginning. New services include: a regularly updated price list, a summary of the TRS-80 Microcomputer Newsletter, product information on TRS-80 hardware and software, news releases and software updates of any patches or changes to existing programs. Another Beginning facility now available to TRS-80 owners is electronic mail, enabling subscribers to send a question or details of a problem via the Beginning to any Tandy computer centre, or directly to Tandy's computer customer services department.

Further information: Tandy Australia Ltd, 91 Kurrajong Ave, Mt Druitt, NSW, 2770. Tel: (02) 675 1222.

Enter M506 on Enquiry Card

Networking guide

BIS Applied Systems has combined with Mackintosh International, BIS's world renowned technological research company with offices in Europe and California, to produce The Computer Manager's Reference Guide for Local Area Networks. BIS Applied Systems says the guide is designed for constant use in decision making on local area networks (LAN). As a manager's decision support aid the guide is expected to have a reference shelf life of several years. The 350-page publication is available for $A390.

Further information: BIS Shrapnel Pty Ltd, 8 Help Street, Chatswood, NSW, 2067. Tel: (02) 412 3266.

Enter M507 on Enquiry Card

Hydrothermograph

JOHN Morris Scentific has released the Isuzu Hydrothermograph, priced at $A450. The hydrothermograph is quartz electronically operated which John Morris says ensures high accuracy without needing to wind it continually. Temperatures between -5 to +55° C and humidity between 0 to 100 per cent are recorded on a chart in a set time span of 1, 7 or 31 days (the user supply presses a button to select the span).

Further information: John Morris Scientific, 61 Victoria Ave, Chatswood, NSW, 2067. Tel: (02) 406 6466.

Enter M508 on Enquiry Card

IT'S LOGICAL!

THE Co-op BOOKSHOP

COMPUTER BOOKS AND SOFTWARE

RANGE: *Full range from both publishing and computer industry sources; from micros to mainframe.*

QUALITY: *We have a new system for keeping all your urgent requirements in stock or easily obtainable. Staff are being especially trained to help you.*

PRICE: *You'll find our prices fair, and* ***Uni Co-op members get 10% off in November/December, 1983.***

AVAILABILITY: *All over NSW, at any branch of the UNI CO-OP — check your nearest store:*

BAY STREET, BROADWAY
(nr. Grace Bros) 212 2211 (Open Saturday)
TECHNICAL BRANCH,
831 George Street, Sydney, 211 0561

UNIVERSITY OF NSW,
Kensington, 663 4024

Also:

INSTITUTE OF TECHNOLOGY,
Broadway, 212 3078
UNIVERSITY OF SYDNEY
692 3705
MACQUARIE UNIVERSITY,
Union Building, 888 6523
WOLLONGONG UNIVERSITY
(042) 28 8672
A.N.U. Canberra,
(062) 49 6244/C.C.A.E. (062) 51 2481

Popular titles at:

NEW ENGLAND UNIVERSITY,
Armidale, (067) 72 2632
RIVERINA C.A.E.,
Wagga, (069) 21 4363
MITCHELL C.A.E.,
Bathurst, (063) 31 4331
NEWCASTLE UNIVERSITY,
(049) 68 4450
NEWCASTLE TECHNICAL COLLEGE,
(049) 61 6382
LAW SCHOOL BOOKSHOP,
232 2250
GRIFFITH UNIVERSITY,
Queensland, (072) 75 2475
GIPPSLAND I.A.E.,
Churchill, (051) 22 1771

Enter M035 on Enquiry Card

Maths library

MICRO Stat's H^{2}SL (Micro Mathematical and Statistical library) volume is available for Z80-based microcomputers running CP/M 2.0+, and can be supplied on most disk formats. This library contains an extensive range of subroutines for disciplines requiring manipulation. Of the 74 subroutines, 12 are dedicated to evaluating the inverse, determinate, Eigenvalues and various forms of decompositions. H^{2}SL 83.09-2 contains 74 sub-routines written in Microsoft Fortran 80, supplied as a linkage package.

Further information: Micro Stat Software, PO Box 125, Queanbeyan, NSW, 2620. Tel: (062) 97 8305.

Enter M528 on Enquiry Card

Edu-Ware coming

PEACHTREE Software has announced the acquisition of Edu-Ware Services Inc, California, which is a supplier of educational microcomputer software for school and home use. Founded in 1979, Edu-Ware's main thrust always has been the application of course design and educational strategies to computer-assisted teaching. Its four main lines — The Science of Learning, Interactive Simulation, Interactive Fantasies and Dragonware — will be available early next year for use on major microcomputers including Apple, Atari and IBM.

Further information: Peachtree Software, 100 Miller Street, Nth Sydney, NSW, 2060. Tel: (02) 929 8200.

Enter M529 on Enquiry Card

Telesolutions

DATA Peripherals has introduced a software kit Telesolutions II from TeleVideo Systems Inc. Telesolutions II includes Telewrite, a full featured, executive-level word processing package; Telecalc, an easy-to-use spreadsheet package and Telechart, integrated graphics software. Telesolutions II runs on Televideo's TS 803, TS 1603 and the latest release the Teleporta pertable perxonal computer. Telesolutions 80, the 8-bit version, includes with new TS 803 and Teleporta systems. For currently installed systems it is available for $A850 plus tax. Similarly, Telesolutions 86 included with all new TS 1603 and TS 1603H systems. It costs $A575 plus tax for installation.

Further information: Data Peripherals, 9 Avon Rd, Nth. Ryde, 2113. Tel: (02) 888 5733.

Enter M527 on Enquiry Card

DEC primaries

DIGITAL Equipment has released four new application software programs designed to serve the primary computing needs of PC users. The programs — Fingraph, Supercom-Twenty, MAPS/PRC and NPL — are suited to database management, graphics, decision support and spreadsheet applications. Fingraph, a visual management support system, converts financial, managerial or opertional database into visual displays. Supercomp-Twenty features a large work station capacity (1000 x 1000) and financial functions, and is compatible with many existing database and graphics programs. MAPS/PRO Financial Planning, a fully-implemented version of the VAX-based financial modelling program, is suitable for corporate budgeting, variance reporting and financial analysis. NPL is a fourth-generation language system resembling Focus, Nomad and Ramis, and is said to feature simple and flexible English syntax for report creation.

Further information: Digital Equipment, Railway Parade, Chatswood, NSW, 2067. Tel: (02) 412 5252.

Enter M530 on Enquiry Card

Caught Napping

NAPS, a menu-driven package designed to save newsagents up to 100 hours a month, was developed over the last 18 months by Fletcher DP Services. The aim was to produce a complete hardware/software system which would manage accounts for less than $6000. The result is said to be a product that responds to any request for information in under five seconds. Naps completely manages paper accounts and also handles time-consuming chores such as price rises, stops and starts and non-deliveries. A new version of Naps will support a full cash register-based system. Currently it runs on Kaypro, Osborne, ICL, Morrow and Sharp.

Further information: Fletcher DP Services Pty Ltd, 320 St Kilda Road, St Kilda, Vic, 3182. Tel: (03) 537 3281.

Enter M531 on Enquiry Card

Baby breakthrough

NORTH Sydney software house, BCM, has been appointed Australian distributor of Baby 34, regarded as a breakthrough in the compatibility of the IBM S/34 and PC. Baby 34 provides an emulated IBM/34 environment for the PC user so that complete RPG11 programs and systems developed for the IBM/34 can be transported intact to the PC. Baby 34 features include operation control language, compiler and runtime execution, source entry utility, screen format generator and data file utility. Baby 34, which runs under PC/DOS requiring a minimum 256K-bytes of memory, will run on standard PC and PC-XT configurations.

Further information: Business Computer Management, 5th Flr, 140 Arthur Street, Nth Sydney, NSW, 2060. Tel: (02) 436 3755.

Enter M534 on Enquiry Card

Wordstar widens

MICROPRO announces that Wordstar is now available to run on the new concurrent CP/M-86 operating systems. Users will be able to run Wordstar on up to four different consoles and edit a different file on each console. One feature of concurrent CP/M Wordstar is the ability to print different files to different printers, while another file is being edited. MicroPro plans to format its entire product line to run under concurrent CP/M and, through use of multiple consoles, a user will be able to enter data with Infostar and begin to sort data on one cosole while switching to another console to print form letters through Wordstar and Mailmerge.

Further information: MicroPro, 33 San Pablo Ave, San Rafael, California 94903. Telephone: (415) 499 1200.

Enter M532 on Enquiry Card

IBM Starburst

MICROPRO is shipping the new user-interface software Starburst for the IBM PC and IBM XT. Starburst, designed to link together software application programs to perform routine office tasks, can be used by anyone who wants to systemise office routines. With a customised Starburst system, novice computer users may simply ask for the starting menu and be guided step-by-step through a routine task such as preparing a specific monthly report from company database. The minimum memory required to run Starburst is 64K for 8-bit computers and 96K for 16-bit computers. Additional memory is required to run other programs used in conjunction with this program. A hard disk or two floppy disks are required to run the system. Starburst includes many features unique to MicroPro's documentation, and introduces a workbook with on-screen tutorial, addressing the differentation in customer needs, and utilises a friendly approach to learning about the product. Starburst components include a program diskette containing on-screen tutorial, workbook, reference manual and cards, command card and user map. Multiple colors are used in the workbook, reference manual and user's map illustrations to illuminate the progressive steps of building a system. The workbook includes five lessons which accompany the Starburst on-screen tutorial.

Further information: Imagineering, PO Box 55, Broadway, NSW, 2007. Tel: (02) 212 1411.

Enter M533 on Enquiry Card

Lisa's family

APPLE has announced that 165 software companies worldwide are developing applications for the Lisa PC. The first of these applications to reach the marketplace was a multi-user, Xenix-based accounting system developed by Open Systems. The accounting system, known as the software fitness program, includes modules for accounts receivable with billing and sales analysis functions, accounts payable, general ledger, inventory, payroll, sales order processing and a fully integrated job-cost function. Open Systems' products, running under Xenix, add the multi-user dimension provided by that operating system to the Lisa's capabilities. One Lisa system can act as a 'host' for other Apple PCs or for several types of terminals.

Further information: Apple Computer Australia, 37 Waterloo Road, North Ryde, NSW, 2113. Tel: (02) 888 5888.

Enter M535 on Enquiry Card

Gamesmanship

IMAGINEERING, has released three games from Sirius Software. The titles are Squish 'Em, Blade of Blackpoole and Gruds in Space. Squish 'Em, featuring colorful graphics and 15 levels of play, is suited to the Vic-20 computer. Blade of Blackpoole and Gruds in Space, two graphic adventure games, are designed for Commodore's 64 home computers.

Six games for the Vic-20, from Tronix also have been released. Titles include Scorpion, Gold Fever, Galactic Blitz, Deadly Skies, Swarm and Sidewinder. Tronix games are distributed in Australia through Imagineering.

Further information: Imagineering, PO Box 55, Broadway, NSW, 2007. Tel: (02) 212 1411.

Enter M536 on Enquiry Card

BASF
MAGNETIC COMPUTER MEDIA
PERIMEDIA: (03) 347 7416

Growing accounts

PEACHTREE Software announces two accounting systems developed for the Australian and New Zealand markets. PBAS, which runs under CP/M and MS-DOS generic operating systems, has been enhanced to use the latest screen-handling and files-access techniques employed by Peachtree. It comprises general ledger, accounts receivable, accounts payable, stock control and sales invoicing. PCAS is said to be a low-cost introduction to computerised bookkeeping. The PBAS system is written in Microsoft Basic, and is available in modules so users can 'grow' the system to meet changing demands of business.

Further information: Peachtree Software, 100 Miller Street, North Sydney, NSW, 2060. Tel: (02) 929 8200.

Enter M522 on Enquiry Card

Sibol for Unix

DIBOL users have the ability to run programs in a Unix environment following the porting of Sibol on Digital Electronics Unity range of 68000 processors. Tests performed to date indicate that Dibol programs will run in the Sibol environment with no software changes. "The availability of Sibol allows Digital to offer a machine with the power of a VAX 750 into the commercial Unix environment at a fraction of the cost, without costly software redevelopment," claims Boris Schlensky, managing director of Digital of Electronics.

Further information: Digital Electronics, 31 Bridge Street, Pymble, NSW, 2073. Tel: (02) 449 4400.

Enter M523 on Enquiry Card

Dicker graphics

DICKER Data Projects has announced the GSX-86 graphics software system on the vector 4. GSX-86 graphics provides access to the high-resolution graphics capabilities of the Vector 4. GSX-86 is the graphics system extension for the CP/M-86 operating system. The graphics device operating system (GDOS) provides the basic graphics functions that can be called and used by an application program. Host and device independent, these functions work on any computer system running CP/M-86 and GSX-86, regardless of what hardware devices are used for output. The graphics input/output system (GIOS) contains the code needed to interface GDOS functions to the specific graphics hardware attached to the computer. It is therefore device dependent and is a functional layer of GSX-86 consisting of device drivers. GSX-86 requires a distinct driver for each graphics device on a given system. Dicker Data also has announced that Personal Basic is available as an option with the range of Vector 4 computers. Digital Research's intercepted Personal Basic tells the user when an error is made, checks syntax and spelling of commands, and provides the user with an editor to change and correct your programs.

Further information: Dicker Data, 78 Captain Cook Drive, Caringbah, NSW, 2229. Tel: (02) 525 2122.

Enter M524 on Enquiry Card

Novice Fastbase

FASTBASE, a system said to allow novice users of dBase II database software to create their own screens quickly and easily, is now available in Australia. FastBase has a file maintenance command file generator, a screen input command file generator, a form command file generator and a powerful command file utility. The file maintenance command file generator has automatic creation functions allowing the addition, modification and deletion of records in various files. The user also can reorganise files, and search for records. FastBase is manufactured by Fourcolour Data Systems Inc, of Dayton, Ohio, US.

Further information: Insystems, 337 Moray St, South Melbourne, Vic, 3205. Tel: (03) 690 2899.

Enter M525 on Enquiry Card

Mars medicine

MEDICAL Computer Consultants, medical specialists, has released a computer program designed specifically to manage information relating to radiology. The program, called Mars, is designed to look after such tasks as accounts, reports, X-ray labels and government assignment forms. Fletcher DP Services of Melbourne developed the package, designed to handle specific information related to radiology practices.

Further information: Medical Computer Consultants, Suite 11, 285 Carlisle Street, Balaclava, Vic, 3183. Tel: (03) 527 3443.

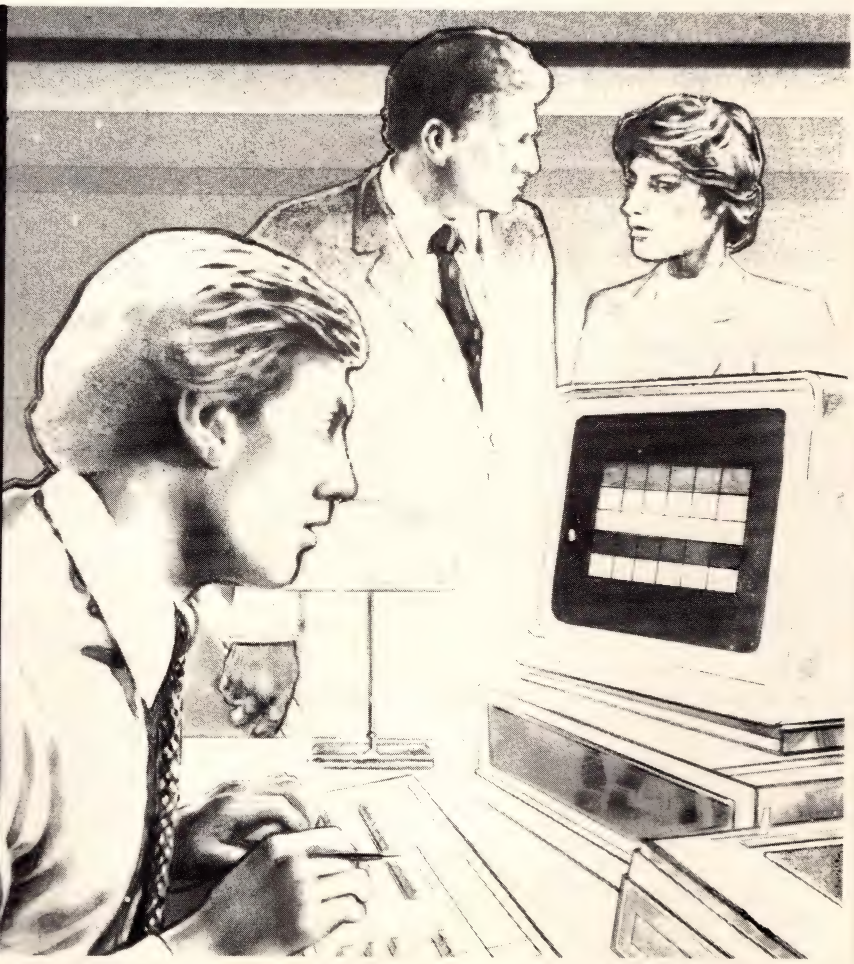
Enter M526 on Enquiry Card

AUSTRALIA'S FIRST INTERNATIONAL MICRO-COMPUTER EXHIBITION AND CONFERENCE.

22nd—25th May 1984

ENDORSED BY:
Government of Western Australia,
Australian Computer Society,
Western Australian Institute of Technology,
Australian Micro-Computer Magazine,
Australasian Computer World.

FOR CONFERENCE DETAILS
PLEASE CONTACT
ROBYN SCOTT
TEL. (09) 350 7717



For further details contact: Jenna Ledgerwood, Computer Exhibitions International 190 Hay Street East, Perth, Western Australia 6000. Tel: (09) 325 0111. Telex: 94124

Enter M041 on Enquiry Card

FREE GAME OFFER

If you own a Commodore home computer,
here's an offer too good to miss.
Buy any Computer Classics VIC 20 game
and get Galactic Defender **free.**
Or buy a Computer Classics 64 game and
get Stratagem **free.**
Two explosive games for the price of one.
Only from Computer Classics.
Available from all leading software retailers.

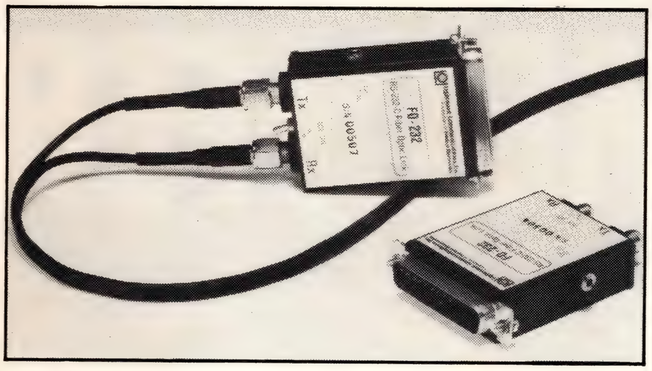
COMPUTER CLASSICS
THE MINDBENDERS

VCC3555

Enter M068 on Enquiry Card

The fiber optic link you've been waiting for.

FO-232



The **FO-232** is a fully duplex optical modem designed for the tranmission of asynchronous data via fibre optic cable.

The **FO-232** completely plug to plug compatible with existing RS-232C 25-pin connectors meeting EIA RS-232C and CCITT V.24.

The **FO-232** is capable of transmitting data up to 2 kilometres at 100Kb/second.

The preterminated fibre optic cable is immune to electrical interference and is small in size and weight.

Low cost — easy installation.
No fibre optic experience necessary.

OTHER FIBRE OPTIC SYSTEMS
INTER-LINK series for process control signals.
4-20ma and 0-10Vdc.
Series 8211 high resolution video links.

DC DATA CABLE

DATA CABLE PTY LTD. (Inc in Vic)
Cnr Croydon & Lincoln Roads, Croydon,
Vic 3136 Australia.
Telephone: (03) 725 0933. Telex: AA35834.

Enter M043 on Enquiry Card

B20 agreement

BURROUGHS has announced that Computer Management Services Ltd will be a distributor for its B20 microcomputers. Richard Cross of CMS said his company used MicroCobol extensively for its packaged software which would suit the B20. "MicroCobol is totally portable — you can move a disk containing programs and files from an IBM series onto a Burroughs B20 and it will run," he claimed. Cross said CMS's accountants division, which had 300 clients, was rewriting the accountant's software in MicroCobol for use on a wide range of mini and microprocessors.

Further information: Burroughs Ltd, 30 Alfred Street, Sth Milsons Point, NSW, 2061. Tel: (02) 922 9300.

Enter M538 on Enquiry Card

Corporate lag

AUSTRALIAN companies are lagging a year behind their counterparts in America and Europe, despite the fact extensive computer power is available at relatively low cost, according to Michael Slattery, managing director of Melbourne software support company, Strategic Information Systems. Slattery returned recently from a three-week study tour or Scandinavia, the UK and the US. The aggressive US market has compelled most industries to maintain their competitive edge by putting computers to work for them — even funeral directors are computerising their operations! Slattery says that in the US, computers are not isolated units in the hands of a few boffins — they are elaborate networks enabling team access to information.

Further information: Kiplings Business Communications, 71 Palmerston Crescent, South Melbourne, 3205. Tel: (03) 690 6155.

Enter M540 on Enquiry Card

Chinese Spectrum

DESPITE the fact that there are 2 million Sinclair computers in homes throughout the world, the market in China, until recently, had remained untapped. With help from the International Data Corp, which acted as a go-between, Sinclair Research and its exclusive trade distributors, Prism Microproducts Ltd, made a successful trip to China recently, resulting in contracts to assemble the ZX81 and ZX Spectrum in China, plus a letter of intent which may lead to the eventual sale of thousands of Sinclair computers in that country.

Further information: International Data Corp Asia Ltd, 177 Gloucester Road, Hong Kong. Tel: 5-724742.

Enter M539 on Enquiry Card

Wave in store

COMPUTER Wave, in George Street, Sydney (near Wynard Station), might well be called the store for all seasons. According to owner Bernhard Kirschner, it's mostly business talk during the week and family fun and education on Saturdays and Sundays. "During the week, we find ourselves demonstrating Osborne, Texas Instruments and Apple systems, usually for word processing and modelling applications. On the weekend, the store is filled with families — the same dad who, during the week, bought a computer for the office, may be the same one trying to convince mum that the kids need an Apple, Commodore or Atari home computer more than she needs a new washer," Bernhard said.

Further information: Computer Wave, 325 George Street, Sydney, NSW, 2000. Tel: (02) 29 1631.

Enter M541 on Enquiry Card

Aiding architects

ENGINEERING Computer Sales has appointed Dr Roger Coldwell to assist architects with installation of the ECS CAD200 computer-aided drafting systems. He will also manage customer support for new and existing installations in the architectural area. Dr Coldwell is both a registered architect and a member of the Australian Computer Society. Based on Hewlett-Packard hardware, the ECS CAD200 system is being used in Australia and overseas for architectural drafting, and in electrical, mechanical and town planning applications.

Further information: Engineering Computer Sales, 1860 Princes Highway, Clayton, Vic, 3168. Tel: (03) 543 2244.

Enter M542 on Enquiry Card

Hands-on display

A HANDS-ON display of computer software with specific application in distribution will be a feature of the third national Physical Distribution Management conference at the Melbourne Hilton Hotel on February 13-15 next year. It will be the first time that such a specialised display has been organised for distribution managers, according to Bill Jarrard, chairman of the conference program committee. Jarrard says distribution managers will be able to discern the improvements that computers can make to their organisation's systems. Companies expected to be prominent at the conference include NCR, Burroughs, ICL, Wang, Hewlett-Packard and IBM.

Further information: Australian Institute of Management (Victoria), 10 St Leonards Avenue, St Kilda, Vic, 3002. Tel: (03) 534 8181.

Enter M543 on Enquiry Card

Prime's Golden Halo

PRIME Computer of Australia has won the Golden Halo Award for outstanding advertising in the Industrial and Commerce Advertising Awards. Sydney agency, Magnus Nankervis and Curl was responsible for the Prime Robot print and television campaign which, in seven categories, also won first prize for full colour advertising, first prize for a television commercial, and was highly commended for its full-color campaign. Prime became the first computer company to advertise on television in Australia in 1980.

Honeywell Vision

VISICORP has announced that Vision the applications system will be available on the recently announced Honeywell series 7900 branch automation system, which is an integrated terminal system for banking and other financial institutions. The Series 7900 system can operate as a standalone workstation configuration sharing peripherals, communications facilities and software products. Initially the Vision system was available for the IBM PC — VisiCorp has plans to have Vision available on Texas Instruments, Wang, Xerox and Digital Equipment PCs.
Further information: Imagineering, PO Box 558, Broadway, NSW, 2007. Tel: (02) 212 1411.
Enter M544 on Enquiry Card

Vision support

VISICORP has announced that Digital Research has agreed to support its Vision operating environment as a standard for Digital Research CP/M operating system products. Vision is an interactive, graphics-orientated software environment claimed to allow a PC user to integrate a number of Vision and third-party applictions programs on the system. Digital will work with original equipment manufacturers (OEMs) of PCs to adatp Vision software for CP/M systems. Digital is continuing to develop text-orientated interfaces on CP/M systems.
Further information: Imagineering, PO Box 558, Broadway, NSW, 2007. Tel: (02) 212 1411.
Enter M545 on Enquiry Card

Bookshop boffin

THE University Co-operative Bookshop has appointed Mr Jon Ruwolt as a consultant to develop sales of computer books, software and ancillaries. The Co-op has 20 branches, and it is anticipated they will become major outlets for computer publications and educational software.
Further information: The Co-Op Bookshop, 80 Bay Street, Broadway, NSW, 2007. Tel: (02) 212 2211.
Enter M546 on Enquiry Card

Price slashing

TEXAS Instruments has announced price reductions of up to 59 per cent on many of its home computers peripherals. The prime target for TI's price was is the Disk Controller Card. The new prices will make software such as Microsoft Multiplan and TI writer more affordable to the home user, according to a TI spokesman.

Further information: Texas Instruments (consumer products division), 6-10 Talavera Rd, Nth Ryde, NSW 2113. Tel: (02) 887 1122.

Enter M547 on Enquiry Card

Commodore up 64pc

COMMODORE International, of New York, recently announced record revenues, net income and earnings a share for the fourth quarter and year to June 30. The computer company's net sales rose 124 per cent to about $US681 million. Net income rose 107 per cent to $US91.7 million. Commodore's quarterly performance was as impressive, with revenues up 115 per cent to $US212 million and net income up 64 per cent to $US26.7 million. Net income a share rose to US53¢.

Barson's Sirius assault

MORE than 2000 Sirius computers have been sold in Australia 14 months after being released in this country. To mark the occasion, the national distributors of Sirius, Barson Computers presented the 2001st Sirius to the Shell Co of Australia. "Sirius sales are up to 230 a month and climbing," Mr Barson said. "Since July, many other major organisations have installed the Sirius. These organisations include VicRail, the WA Institute of Technology, the Atomic Energy Commission, Department of Defence, Mazda Motors, W.D. and H.O. Wills, the University of Sydney and Australian Soccer Pools." Barson Computers introduced the Sirius to Australia in July last year.
Further information: Barson Computers, 335 Johnston St, Abbotsford, Vic 3067. Tel: (03) 419 3033.
Enter M548 on Enquiry Card

Baron MD, Julian Barson (centre left), presents the 2001st Sirius to Shell's rural development manager, Frank Booth (centre right), and Berry Holgate. With Barson is Bill Saunders, of BS MicroComp.

Total office design

METROPOLITAN Business Machines is offering total office design under one roof for computers, service, staff training or other office products. The company offers a full range of products for the modern office from computers to typewriters, furniture, calculators and copiers, to office stationary supplies and computer training. The computer product range covers the new IBM PC and the Apple range, as well as a wide range of business software, letter-quality and dot matrix printers ranging from $A500 to $A3000. MBM has a room reserved for buyer training, and offers a 90-day beginning and a one-year extended support guarantee for other staff training.

MBM offers a yearly maintenance contract.

Further information: Metropolitan Business Machines, 338 Sydney Rd, Coburg, Vic. Telelephone: (03) 383 2222.

Enter M550 on Enquiry Card

Cutting glare

IN RESPONSE to the growing demnd by users of small microcomputers for a device to reduce glare and reflection on CRT displays, Technical Imports has released a range of Ordi-Flex mesh-type screen filters to suit most PCs, such as Osborne, Apple, Tandy, Digital, ICL, Olivetti, Zenith and Sanyo. The Ordi-Flex (black matrix) filter, designed to overcome complaints of eyestrain headaches and weariness, is constructed of durable nylon micromonofilament fibres specially woven to give a columnating grid pattern and will reduce 95 per cent of surface glare and about 90 per cent of reflected glare from sunlight and fluorescent lights. Ordi-Flex filters are available in a wide variety of styles, sizes and choice of mesh densities.
Further information: Technical Imports Australia, 6th Floor, 220 Pacific Highway, Crows Nest, NSW, 2065. Tel: (02) 922 66833.
Enter M549 on Enquiry Card

Apple workshops

THE chartered accounting firm, Peat Marwick Mitchell Co, is conducting client microcomputer workshops using Apple computers. Apple IIs are used to give business managers and financial controllers hands-on experience. More advanced workshops in future will feature the benefits and potential uses of financial modelling, explaining typical functions and how to select the best software. More sophisticated internal functions performed by Peat Marwick are conducted on Apple III PCs.

Software shuffle

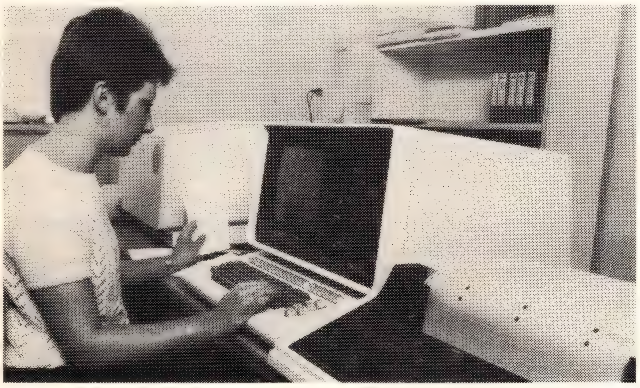
PEACHTREE Software has announced two management moves following the company's announcement of its new Australian accounting products. Robert Fisher, formerly general manager, has returned to the US to take up a fresh appointment. John Flynn, formerly customer support manager, is now manager, sales and support. He will be responsible for all Peachtree marketing and support operations in Australia and New Zealand.
Further information: Peachtree Software, 100 Miller Street, Nth Sydney, NSW, 2060. Tel: (02) 929 8200.
Enter M551 on Enquiry Card

BASF
MAGNETIC COMPUTER MEDIA
PERIMEDIA: (03) 347 7416

Speedier, computerised billing

A NEW computerised billing system provides much faster invoicing and more effective management for Sydney's largest medical services centre. The new computer system provides instant information via on-line enquiry terminals. The Institute of Clinical Pathology and Medical Research, located within the Parramatta Hospitals, at Westmead, is the largest pathology laboratory in the Southern Hemisphere, processing up to 30,000 tests a week.

About half these tests are billable to the patient, a health fund or some other institution, so the institute must raise invoices for the tests. After using a six-day turnaround batch system, the hospital decided to develop an on-line system. The hospital awarded a tender to Amicron to develop the system and provide the service on a turnkey basis. Using the new system, the data is then batch entered into floppy disks using Facom key-to-disk units. From there, the disks are transferred to a National Panasonic desk-top computer which transmits the data to Amicron's Facom M140F mainframe computer. This then updates the patient records, and invoices are printed once a week.



The institute's processing equipment.

Elders' Videotex

ELDERS IXL Ltd, has installed a Videotex system on trial throughout its nationwide network. Most of the terminals are being deployed in the pastoral group area, in its livestock trading operations.

The system enables Elders' clients interested in buying or selling livestock to have instant, up-to-the-minute information on prices for any desired quantity of livestock (sheep, lambs, cattle, pigs), according to classification schedules: with specification as to weight class and weight range, quality, type of feed, conformation, breed, and other pertinent information.

The data is stored at a central computer base in Melbourne. There are 120 Videotex units plus a customised mix of peripheral equipment throughout Elders' nationwide network. Elders' Videotex system has been commissioned with the help of Computer Power, Melbourne, with all terminal equipment being supplied, installed and serviced by Visionhire (Australia) Pty Ltd.

Life Saving Sord

MITSUI Computer Systems recently handed over a Sord M23 III comuter system to the Royal Life Saving Society (NSW Branch). The system will be used to record all examiner details and awards completed. Financial accounts and wordprocessing work will also be handled by the society's Mitsui-trained staff.

Further information: Royal Life Saving Society, The Grand Parade, Brighton - Le - Sands, NSW 2216. Tel: (02) 597 2044.

Enter M556 on Enquiry Card

Sanyo Typestar

BY USING the Sanyo Typestar program with a Sanyo MBC 1000 microcomputer, David Graphic Sales, a Sydney typesetting and graphics company, has been able to illustrate how speed and accuracy can provide cost savings from PC to typesetting. Normal wordprocessing information is keyed into the MBC 1000 on a standard 5½in floppy disk containing the Typestar data. David Graphics transfer the information to its computer disc system operating a computerised photo-typesetter and the Sanyo codes are then translte dinto typesetting codes by a simple program run. Keyboard operators of the Sanyo computer do not have to delve into typesetting techniques — all the operator has to know is what typesetting style for the final job is required.

Further information: Sanyo Office Machines, 127 Walker Street, North Sydney, NSW 2060. Tel: (02) 929 4644.

Enter M557 on Enquiry Card

Business Modeller

BRISBANE software house BMS recently announced an enhanced version of Business Modeller, its financial modelling system for planning and control. Jack the Slasher, the low-cost grocery retail operation selling through foodbarns in Queensland, NSW and the Northern Territory, uses the BM system — on the IBM 4300 series running under DOS/VSE/CICS.

Doug Wells, Slasher's accounting manager, says the company has been using the system for about six months for weekly and monthly management reporting, statistical reporting and budgeting.

"What used to take us a week and a half to do, can now be done overnight. We also have the benefit of involving foodbard managers in their own budgets." Because the company is now owned by a US company (Safeway Stores of America), BM has helped to standardise various reports to US standards.

Further information: Business Model Systems, 3rd Floor, 518 Brunswick Street, New Farm, Qld 4005. Tel: (07) 358 4800.

Enter M558 on Enquiry Card

Conserving energy

THE TC series of automated systems, which can be adapted to energy management, alarm monitoring and access control functions, are being developed by air conditioning engineer and contractor Thos Clark and Sons. The TC-3000, which covers air conditioning, security, access control, fire control, light and lift control using microprocessor-based intelligent remotes capable of standalone operation, incorporates full control point adjustment and direct digital control for energy management purposes. The heart of the TC-300 is a Wicat computer to which any combination of floppy disk, hard disk, tape drive and color graphic can be added. Other systems include the TC-1000, which has been created for small-building owners and managers.

Further information: Thos Clark and Sons, 67 Chapel Road, Bankstown, NSW 2200. Telephone: (02) 709 5422.

Enter M559 on Enquiry Card

THIS REMARKABLE WEEKEND PACKAGE
WRAPS UP YOUR BUSINESS WORRIES

NEC Advanced Personal Computer
2 MEGABYTES DISK STORAGE
12 Month Warranty

Personal Computer of the year.

- Weekend at Hilton Hotel
- Software – Complete Accounting Package. Includes Word Processor or software to equivalent value.
- 2 Days Training
- Video Cassette recorder to watch your training tapes or a camera if you already have your Video Cassette.

If bought separately value $8,000.00

RING NOW! VACANCIES ARE LIMITED
DIRECT DATA — 1065 High Street, Armadale, Vic, 3143. Phone: 20 6949

H&M

Enter M037 on Enquiry Card

o obtain further details of roducts in the editorial columns r advertisements which carry n *Enquiry Number*, please use he FREE Product Enquiry Service. Just enter the Enquiry Numbers on a Product Enquiry Card. You may enter as many nquiries as you like, but not hore than six to a card please. If haking more enquiries please se a second card. Finally, omplete your name and adress PLUS Job/Title and Inustry codes plus micro inforhation which is for statistical urposes only. Your enquiries vill be speeded to the companies oncerned for servicing.

/TITLE CODES:

Director/partner/general manager
Co. secretary/other corporate manager
P management; operations; systems analysis; programming; other inhouse DP staff
Software/systems development
Computer consultants
Office administrators
Technical/Scientific/R&D
Engineering/Manufacturing management
Accountant/Lawyer/Medicine
Marketing/Sales
Educators/Librarians
Consultants (other than Computer Consultants)
Student
Others ______________________
(Please describe)

USTRY CODES:

Computers and electronics including manufacturers; system and software companies; OEMs; dealers; distributors; marketers.
Manufacturing, other than computers and electronics.
Public Utilities/Communications Systems/Transportation.
Wholesale/Retail Trade
Finance/Insurance/Banking
Mining/Construction/Oil and Refining
Business/Services (not DP)/Real Estate
Education/Medicine/Law
Government — Federal/State/Local
Printing/Publishing/Other Communication Services.
PR and Advertising
Others ______________________
(Please describe)

FREE Product Enquiry Service

To obtain further details — literature, prices and other information that may be available — for the products described in the editorial columns or from advertisements, enter the number shown at the foot of the item onto the PRODUCT ENQUIRY SERVICE CARD.

You may make as many enquiries as you wish, however, not more than six (6) on any one card please. You may complete more than one card if required.

Finally, enter your name, address, job function and other details and simply pop into the mail.

Your enquiry/s will be passed to the company/s concerned as soon as possible in order that they may forward the information to you. **Enquiries will not be processed after two months following issue date.**

IMPORTANT
In order that you may continue to receive Australian Micro and to use the *Product Enquiry Service* for the information you require from future issues, we suggest you enter a subscription for $20 per year. Usual price for 12 issues is $24.

Product Enquiry Card

australian
Micro
computer magazine

ENTER ENQUIRY NUMBERS

☐ ☐ ☐ ☐ ☐ ☐

Name ______________________
Title (opt.) ______________________
Company (opt.) ______________________
Address ______________________
______________________ Postcode ________
Telephone (optional): (   ) ______________________
Signature ______________________

My job title code is ☐
My industry code is ☐
☐ I use a micro for professional use.
☐ I own a micro for personal use.
☐ I intend buying a micro within 12 months.
☐ Please tick if you are already a subscriber.

Product Enquiry Card

australian
Micro
computer magazine

ENTER ENQUIRY NUMBERS

☐ ☐ ☐ ☐ ☐ ☐

Name ______________________
Title (opt.) ______________________
Company (opt.) ______________________
Address ______________________
______________________ Postcode ________
Telephone (optional): (   ) ______________________
Signature ______________________

My job title code is ☐
My industry code is ☐
☐ I use a micro for professional use.
☐ I own a micro for personal use.
☐ I intend buying a micro within 12 months.
☐ Please tick if you are already a subscriber.

australian
Micro
computer magazine

PRODUCT ENQUIRY SERVICE

The easiest and fastest way to obtain the Information you require.

For details, see reverse side.

australian
Micro
computer magazine

AFFIX
STAMP
HERE

Reader Service Department,
Computerworld Pty. Ltd.,
P.O. Box 929,
CROWS NEST 2065 AUSTRALIA

australian
Micro
computer magazine

AFFIX
STAMP
HERE

Reader Service Department,
Computerworld Pty. Ltd.,
P.O. Box 929,
CROWS NEST 2065 AUSTRALIA

If you like wha
you're reading
now you'll wan
to be reading i
every month

And the only
way to
guarantee tha
is through an
annual
subscription

$20 p.a. for 12
issues or just
$1.67 a month
has got to be
one of the
best bargains
around.

Exxon updates

DATRONICS has announced enhancements to the Exxon 500 Series Information Processor. The enhancements are: WP-CP/M integration, a software package that allows users to store and access CP/M files in word processing mode; Async II, an asynchronous communications package; 3270 emulation, and Exxon Bisync, the bisynchronous protocol that allows emulation of 2770, 2780 and 3780 protocols.

Further information: Datronics, 376-380 Lane Cove Rd, North Ryde, NSW, 2113. Tel: (02) 887 9333.

Enter M552 on Enquiry Card

Bye package

TRANSNATIONAL Data Corp Pty Ltd has released another communications package from Mycroft Labs Inc. This package is called Bye and is said to allow a microcomputer to become a host machine to another computer or terminal through an auto answer modem. The host system may be

Further information: Transnational Data Corp Pty Ltd, PO Box 76, St Leonards, NSW, 2065. Tel: (02) 439 6533.

Enter M553 on Enquiry Card

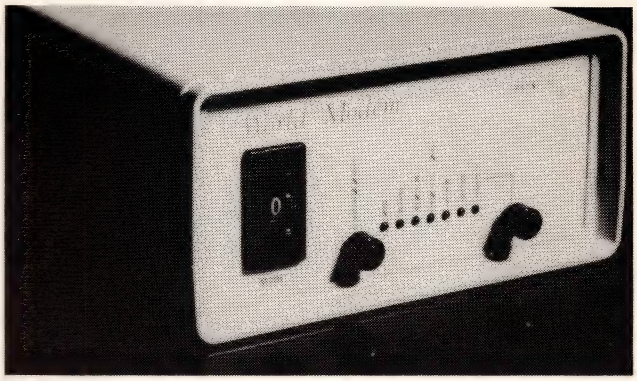
Intelligent telex

TWO new software packages announced by Case Communication Systems are said to enable the Case TLX intelligent telex interface to be used with IBM and ICL personal computers. The package is said to allow the personal computers to send and receive telex messages directly to the telex network at the same time as performing normal office tasks. A program running on the system in "background mode" constantly monitors the telex line via the TLX interface unit, which converts telex signals to computer readable form. When telexes arrive they are stored automatically on disk and optionally printed out; telexes prepared by the operator are sent by the system, with retries performed automatically should the telex fail to get through. Other features of the package include a full word processing editor, allowing operators to prepare telex messages in the same fashion as all other office documents.

Further information: Case Communication Systems, 1-3 Rodborough Rd, Frenchs Forest, NSW, 2086. Tel: (02) 451 6655.

Enter M554 on Enquiry Card

World modem release



DATA Sat Australasia Pty Ltd has released the enhanced version of the World Modem PSTN1 to be known as the World Modem PSTN-IE. Advantages of the enhanced version over modems now available include the integration of a Data Sats IDLC processor providing extra standard features including two programmable connection modes (CCITT V24 108.1 and 108.2), two connection routines in each mode, five disconnection routines, seven status indicators, four modem standards, automatic answering utilising existing software, selectable auto or manual connection and dial pulse and busy tone exclusion routines. The World Modem will be available from our authorised dealer early next year.

Further information: Data Sat Australasia Pty Ltd, Suite 5, 522-524 Kingsway, Miranda, PO Box 5, Kingsway, NSW 2208. Tel: (02) 525 6688.

Enter M555 on Enquiry Card

ACEC '84

Second Australian Computer Education Conference

"Education and Computers: Dreams and Reality"

2-5 September, 1984

To be held in Sydney at
Macquarie University

The conference will consist of invited papers, contributed papers, workshops, poster sessions; indeed, contributions in any form of interest to participants based on the four themes of the conference:

Computing as an Intellectual Discipline
Computers as a Learning Tool
Computers as a Social Phenomenon
Computers as a Resource (Policy and Administration)

A number of overseas and local keynote speakers have been invited and

CONTRIBUTIONS ARE SOUGHT

From others willing to present a paper or lead a workshop or poster session.

Please send an abstract outlining your contribution to:

Programme Chairman, ACEC '84
Computer Education Group (NSW)
P.O. Box 148
BROADWAY NSW 2007

Call for Contributions
and
Invitation to Attend

Abstracts should be received before 1st February, 1984.

Ram
Rapid Access Marketplace

ACCESSORIES AND DISKETTES

DE VERE COMPUTER ACCESSORIES (DCA)
10th Floor, 124 Albert Road,
South Melbourne, Vic. 3205.
Telephone (03) 690 8955.
Offer a full range of media supplies and accessories.
Australian distributor for Le Disc flexible diskettes.

BOOKSHOP

MULTI-TEXT COMPUTER BOOKS PTY LIMITED
Shop G13 Wallaceway, Chatswood NSW 2067.
Telephone (02) 412 3561.
Books for all computer users — micros to systems. Student texts, programming, operations, business applications.

BUSINESS CENTRE

DICKER DATA BUSINESS COMPUTER CENTRE
261 George Street,
Sydney, NSW 2000.
Telephone (02) 27 6662.
Demonstrations of the VECTOR 4, the company computer, general business software, word processing, accounting. Computer books, magazines and consumables.
Open 9.30-6.00 p.m., Monday to Friday.

BUSINESS SYSTEMS

C.P.M. SYSTEMS
9th Floor, 505 St Kilda Road,
Melbourne 3004.
Telephone (03) 267 4755
Complete low-cost: CP/M Based Business Systems, for Hotel, Motel, Restaurant, Real Estate, Service Station, Insurance, Farming, Medical, Dental, etc., Businesses.

CATALOGUES

HEX COMPUTING
17 Irvine Street,
Peppermint Grove, WA 6011.
Telephone (09) 384 9043.

Replay II Apple Copy Cards $180. Copies software from memory without parameters. Places in DOS 3.3 file.

3A Apple Computer Catalog, 200 pages of Apple Hardware, Software, at discounted prices. 300 Public Domain Disks. $4.00.

CONSULTANTS

ESP MANAGEMENT SYSTEMS PTY LTD
2 Ella Street, St Leonards NSW 2065. Telephone (02) 439 8055
117 Cardigan St, Carlton Vic 3053. Telephone (03) 347 0555
Retail, Manufacturing, Medical, Client Accounting, Property Management, Education and other Business Systems.
Areas of specialisation: Minis, Micro.

O.U. NORMAN HOLDINGS PTY LTD
STAFFING CENTRE
Suite 3401 Australia Square
Sydney, NSW 2000.
Telephone (02) 241 3741 or
(02) 27 8472
EDP Personnel consultants in Australia for over 10 years.

FENWICK SOFTWARE PTY LTD
29th Floor, BHP House,
140 William Street, Melbourne,
Vic 3000.
Telephone (03) 67 9265.
A personal advising and consulting service to assist the executive to make effective use of his personal computer.
Building decisions support systems for executives.

WARWICK WOODWARD ASSOCIATES
56-62 Berry St, North Sydney
NSW 2060.
Telephone (02) 929 0500.
Permanent recruitment of data processing staff — advertising campaigns — media selection-shortlisting.

CONTRACT PROGRAMMERS

CREATIVE STRATEGIES PTY LTD
15 Centennial Avenue, Lane Cove NSW 2066.
Telephone (02) 427 5526.
Specialising in M68000 real-time application.

SPAN COMPUTER CONTRACTS (AUSTRALIA) PTY LTD
56-62 Berry St, Nth. Sydney
NSW 2060.
Telephone (02) 929 0500.
Contract programmers, systems analysts, consultants, project management, software packages.

CONNECTORS

EAST WEST ELECTRONIC DISTRIBUTORS PTY LTD
117 Smith Street, Fitzroy,
Vic 3065.
Telephone (03) 419 9833.
Specialising in AMP. Electronic connectors. Circular connectors. 'D' type connectors. Heat shrink tubing and cable assemblies to your specifications.

DATA PROCESSING

COMPUTERLIST
14 MacIntosh St, Melrose Park,
NSW 2114.
Telephone (02) 85 2872.
For your mailing lists and data management, form letters, tape and disc library catalogue lists.

EDUCATION

W.A. SCHOOL OF COMPUTING
2/294 Rokeby Rd, Subiaco,
Western Australia 6008.
Telephone: (09) 382 2692.
Courses on:
What is a Computer, Buying a Computer, Using CP/M, Wordprocessing & Learning Basic.
Correspondence courses and tuition, day and evening.

FURNITURE SUPPLIES

COMPUCARE PTY LTD
2nd Flr., 98 Bay Rd, Waverton
NSW 2060.
Telephone (02) 922 5199.
Computer furniture and accessories specialising in computer desks and acoustic covers.

GRAPHICS

ENTERCOM COMPUTER COMPANY
136 Bridge Road,
Richmond 3121.
Telephone: (03) 429 5883.
Graphics, Communications & Interfacing expertise. Engineering, Architectural and Scientific applications.
Sirius and NEC dealers.

HARDWARE

CHOICE COMPUTERS
327 Whitehorse Road,
Balwyn, Vic. 3013.
Telephone (03) 830 5318.
Authorised dealers for:
APPLE, NEC and KAYPRO peripherals.
Wide range of business and professional applications software.
Consulting and training available.

THE INDEPENDENT MICRO COMPUTER SUPPLY COMPANY
820 Elizabeth Street, Waterloo
NSW 2017.
Telephone (02) 698 7756, or
(02) 698 7666.
Authorised dealers for:
IBM, KAYPRO, NEC , APPLE, COMMODORE, etc. Plus wide range of software and peripherals. As we are independent suppliers you get the right system for your needs.

HARDWARE MAINTENANCE

PERCOMP Personal Computer Services
20/65 Queens Road,
Melbourne, Vic. 3004.
Telephone (03) 529 4651.
Specialists in maintenance of microcomputer equipment.
On-site contracts available.

INSURANCE

EMLTECH PTY LTD
P.O. Box 117, Willoughby NSW
2068.
Telephone (02) 92 4175.
Specialist in computer insurance both personnel and commercial.

Ram

Rapid Access Marketplace

MAILING HOUSES

DATAMAIL
17 Barclay Street, Marrickville
NSW 2204.
Telephone (02) 516 3833.

Complete mail processing services of computer addressing, file creation, bursting, folding and inserting of statements, invoices, letters, etc., with max. postage savings.

MAINTENANCE

COMPUTER ELECTRONICS PTY LTD
50 Johnston Crescent,
Lane Cove, NSW 2066.
Telephone (02) 428 5893.

Maintenance of microcomputers, specialising in Apple, Tandy & Commodore.
Fast reliable service by experienced professionals.

SOFTWARE SUPPLIER

ARCHIVE COMPUTER SERVICES SYDNEY PTY LTD
2nd Floor, 84 Alexander St,
Crows Nest. 2060.

Telephone (02) 439 2723.

Suppliers of retail & wholesale software for personal computers, including spreadsheets, wordprocessors, compilers, databases, etc., for CP/M, MS-DOS, PC-DOS, et al.

We also supply a range of applications software for Printers, Architects, Builders, Clubs, etc.

Software is supplied on a wide range of disc formats, and a disc format conversion service is also available.

PRINTING

TRUE BLUE PRINTING
18 Falcon Street,
Crows Nest, NSW 2060.
Telephone: (02) 439 1281.

Personalised continuous stationary.
Your design or one of our extensive range of pre-printed forms.
We can personalise any type of continuous stationery. Specialising in short runs 500 to 5000 forms.
Let us keep the others honest. Give us a ring before placing an order.

WORD PROCESSING

WORDPRO SETTING
89 Berry Street, North Sydney,
NSW 2060.
Telephone (02) 436 1533.

A bureaux service converting word processing diskettes to phototypesetting diskettes for the trade.
41 W.P. systems for conversions available.

FOR SALE

GEARHART PTY LTD
Telephone: (08) 46 9333.

Second-hand equipment 1-2 years' old.

3 x HP 85 Computers.
1 x HP 45B Computer.
2 x HP 99 15A Computers.

2 x HP 9875A Cartridge Tape unit.

1 x HP 3497A Data acquisition control unit.

3 x HP 82901M Disk Drives.
3 x HP 7225B Plotters.

SOFTWARE

SOFTWARE SOLUTIONS (Australia) PTY LTD
144 Pacific Highway, North Sydney NSW 2060.
Telephone (02) 92 0603.

Software tools experts . . .
NUCLEUS is a program generating system for data creation, retrieval, manipulation and reporting which enables the production of new customised applications to be produced by non-technical staff. Programs automatically generated by NUCLEUS as the user interactively responds to simple questions at the terminal.

NUCLEUS provides an extensive documentation of Systems as they are built.

NUCLEUS leads the user through the entire process of applications development, eg., a personnel system, with its own database and reporting capabilities incorporating sorting facilities can be created easily and quickly.

A Report Writer is available as a separate module.

NUCLEUS runs on micro systems that run CP/M, CP/M-86, MS/DOS and requires 64K RAM.

WE TAME THE MICRO MONSTER

There's so much happening in micro computing these days that the flood of information has become something like a micro monster which is out to devour us.

Undaunted by the ferocity of this monster, we at **AUSTRALIAN MICRO** have now tamed the beast and you are the one to benefit.

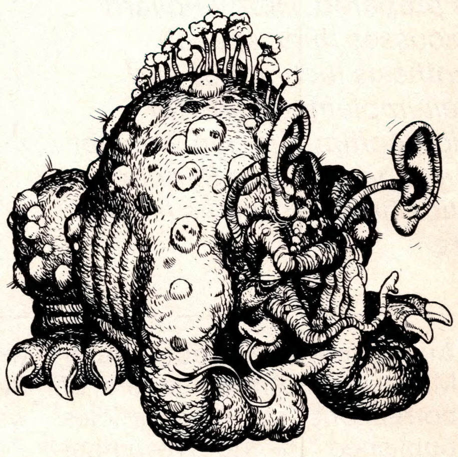
Each issue of **AUSTRALIAN MICRO** from now on provides you with a direct communications link to all companies who take advertising space and/or whose products are mentioned in the department pages.

Our **FREE Product Enquiry Service** enables you to easily and quickly obtain further information about the products in which you are interested, and in order that you may make a buying decision.

Full details of how to use the Product Enquiry Service may be found adjacent to the Product Enquiry Card, in this issue.

This service has been introduced to the Australian microcomputer community exclusively by **AUSTRALIAN MICRO,** a bonus which we invite you to use to your benefit.

Make it a regular part of your life, unlike the micro monster.



Next Issue

Australian Microcomputer Survey,

We document the events of 1983, including all new microcomputers released during the year. Tony Adams, Norman Kemp, Ron Pollak and Ian Webster try to discover the trends, and Tony Smith discusses the emergence of the Australian microcomputer industry. We present the top selling software packages from Australia's leading distributors and the microcomputing community has its say about 1983 and the year ahead.

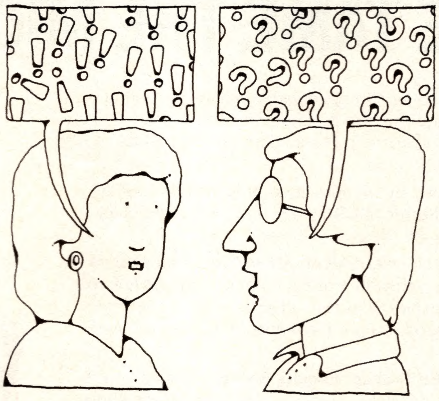
1983
1983
1983
1983
1983
1983
1983

CP/M Word Processors

Dr William Hall compares the five leading CP/M wordprocessors: Final Word, Perfect Writer, Select, Spellbinder and Wordstar.

Speech synthesis

If you haven't been spoken to by a lift yet, it may be best to be prepared. Henry Pollard discusses three speech synthesis techniques and their implementation for microcomputers. Ian Webster investigates a new Sydney office building and its talking lifts.



Australian Microcomputer Magazine notifies readers of corrections to three articles published in the November issue.

The article *Clockwork Classroom* published on page 42 was written by Tony Adams, not Tony Smith.

The article *Power for users on move* on Page 94 was written by Ian Robinson of Perth company, Synapse Software.

The table accompanying Mike Clarke's dBase benchmark article should not have had a Total column. The times in the table are split times.

The price of Gambit Games' G-Pascal reviewed on page 63 is $A79.95.

AD INDEX

AB Office Machines	73
ACT	Inside Back Cover
Anderson Digital Equipment	39
Archives Computers	7
ATS Education	105
Attache Software	103
Business Computer Management	95
Brother Industries	46
BS Microcomp	81
Canon Aust.	65
Case Communications	25
Caulfield Business Computers	57
Computer Age	111
Computer Bookshop	31
Computer Classics	115
Computer Exhibitions International	114
Computer Galerie	28
Computerland	41
Computer Spot	98
Computerm	24
Co-op Bookshop	112
Data Cable	116
Data Decor	35
Dataflow Computer Services	45
Data Peripherals	36
Diagnostic Devices	67
Dicker Data Projects	Back Cover
Digital Equipment Corporation	18
Direct Data	118
Electromedical Engineering	62
Email Computer Systems	54
Entercom	60
Gavilan Corp	74
Imagineering	Inside Front Cover, 78 & 107
Insystems	50
Jupiter Micro Craft	27
KJ Computer Services	8
Maxwell Office Equipment	24
Metropolitan Business Machines	17
Micro EDP & Hardware	21
Micro Educational	22
Micro Processor Applications	88
Micro Visions	12
Modem Technology	27
NEC Information Services	42-43
Non-Linear (Aust)	53
Perimedia	71
Pittwater Computers	72
President Office Machines	89 to 92
Radaro Computer Devices	70
RDM Computers	66
RF Computer Communications	56
Robocom Australasia	84
Roland Corp. Australia	10
Scarlane	44
SCA Software Corp of Aust	108
Scientific Devices	32
Siemens	14
Software Centre	40
Software House	13
Texas Instruments	86
Verbatim (Aust)	101
Warburton Franki	96

WE CAN GIVE YOU THE POWER!

Make the Right Decision for Your Computer Storage:

THE POWERFUL ACT

The ACT Hard Disk System upgrades your computer to a powerful high performance machine. Supported throughout Australia, the ACT HARD DISK is the answer to your storage problems. ACT, the affordable hard disk system.

THE RELIABLE ACT

Far greater storage than floppy drives with reliable performance under all conditions, makes the ACT Hard Disk unbeatable value. Designed and manufactured in Australia.

5-31 Megabytes of Hard Disk Storage.
5 Plus 5 Fixed/Removable Hard Disk.
5 Megabytes Removable Hard Disk Cartridge.

THE LOGICAL ACT

The obvious choice for your micro, the ACT HARD DISK is now available for:
APPLE II • IBM PC • DEC RAINBOW • PEACH • KAYPRO • OSBORNE • MICRO • DECISION • MICROBEE • HEATH ZENITH • NORTHSTAR • SANYO • SUPERBRAIN • TANDY • TIME OFFICE • TOSHIBA • XEROX • S 100 • SIGMA OKI • NEW RELEASE: SIRIUS & NEC APC.

THE SHAREABLE ACT — PC NET

PC Net is a hard disk sharing system — simple and cost effective. The disk is divided into logical drives, allowing independent users to share the disk. Available for most popular brands of microcomputer.

N.S.W.
act
75 Willoughby Road,
Crows Nest, NSW 2065
Phone: (02) 439 6300
Telex: AA24816

S.A.
COMPUTER MART PTY LTD,
123 Gouger Street,
Adelaide, SA 5000
Phone: (08) 51 5363, 212 2888

W.A.
MICRO E.D.P. HARDWARE
9a/1 Leura Avenue,
Claremont, WA 6010
Phone: (09) 384 5511

DEALER ENQUIRIES WELCOME

Enter M054 on Enquiry Card

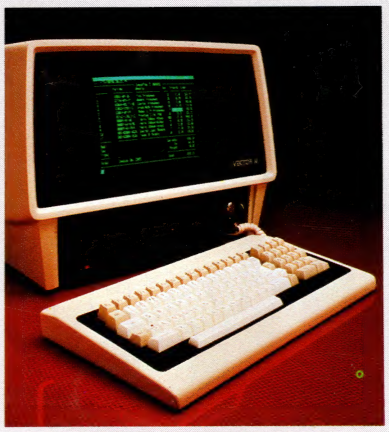
Have you ever considered that you could need more than a personal computer?

The Vector 4, The Company Computer, is more than a personal computer, because a personal computer by itself won't solve your business problems. The Company Computer is a total concept that will.

The Vector 4 has dual processors, combining the power of the 8088 16-bit processor with the existing 8-bit Z80B processor. In addition the Vector 4 comes standard with 128K of main memory using 64K RAM chips, and is expandable to 256K.

Vector 4 design innovations such as time shared memory, single chip video display controller, and single board construction allow more standard features, greater reliability and easier installation and servicing.

The Vector 4 is available in both floppy and hard disk configurations, making it as flexible as possible to suit your needs.



The Vector 4 can also be networked with other Vector 4's, so everyone is always working with the latest, up-to-date information, utilising inexpensive telephone wire. Up to 16 Vector 4's can be linked together in a flexible and expandable multi-user system.

Ergonomically designed, the Vector 4 is at home in the most sophisticated and demanding user environments.

Vector Graphic is a hardware manufacturer with a strong commitment to software development. Memorite III- Word Processing and Execuplan II- Financial Modelling are included in the Vector 4 package.

Dicker Data have been selling and servicing Vector Graphic products for 5 years. Vector were one of the first companies to enter the microcomputer business. Our experience is invaluable to first time users or advanced programmers.

VECTOR

THE COMPANY COMPUTER.

For more information contact:

HEAD OFFICE: Dicker Data Projects Pty. Ltd. 78 Captain Cook Drive, Caringbah. N.S.W. 2229 (02) 525 2122,
DICKER DATA BUSINESS COMPUTER CENTRE: 261 George St, Sydney. 27 6662

N.S.W.: ALBURY — 21 3926, CHATSWOOD — 411 1892, COFFS HARBOUR — 52 4077. **VICTORIA:** HAWTHORN — 818 0794, PORT MELBOURNE — 64 1372. **ADELAIDE:** 223 4950. **WESTERN AUSTRALIA:** LEEDERVILLE — 381 4444, VICTORIA PARK — 362 4249. **QUEENSLAND:** 391 9209.

Enter M053 on Enquiry Card